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By W. A. LLOYD, J. I. FALCONER and C. E. THORNE

Wooster, Ohio, U. S. A., July, 1918

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[1]In cooperation with the College of Agriculture, Ohio State University, Columbus.
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CONTENTS

Page

Preface 5

PART I

HISTORY OF OHIO AGRICULTURE

1. The settlement of Ohio 9
2. History of Ohio Agriculture 12
   a. Epoch of preparation 13
   b. Epoch of formation 14
   c. Epoch of standardization 15
3. The aboriginal period 17
   a. The prehistoric farmer 17
   b. Later Indian agriculture 18
4. The pioneer period 23
5. Colonization of public lands 24
6. Minor land grants and divisions 28
7. Influences affecting population before 1832 32
8. Development of population 37
9. Agriculture during pioneer period 44
10. Pioneer crops and methods 48
11. Pioneer livestock 60
12. Roads and internal improvements 69
    a. Pioneer roads 70
    b. The National road 73
    c. Building of canals 74
13. Machinery and methods 77
14. Social life of pioneers 81
15. Agricultural organizations 82

PART II

OHIO AGRICULTURE FROM 1850 TO 1910

16. Development of dairy industry 87
    a. Butter made on farms 96
    b. Cheese 97
    c. Milk sold from farms 99
17. Development of swine growing 100
18. Development of sheep industry 107
19. Horses 115
20. Development of farm crops in Ohio 116
21. Wheat 128
22. Oats 140
23. Hay 152
24. Clover 161
25. Alfalfa 162
26. Barley 163
27. Buckwheat 166
28. Rye 169
29. Potatoes 171
30. Tobacco 175
31. Sugarbeets 181
32. Vegetables 182
33. Maple syrup 183
34. Orchards 184
35. Small fruits 187

36. Grapes 188
37. Receipts from sale of feedable crops 190
38. Cash expended for fertilzers 191
39. Size of farms 192
40. Farms operated by tenants 196
41. Development of land values 199
42. Prices 211
43. Development of railroads in Ohio 213
44. Development of cities and rural population 216
45. Development of farm machinery in Ohio 224
46. Development of agricultural regions 233
47. The cattle industry in Ohio 239

PART III

CROP PRODUCTION BY COUNTIES IN OHIO SINCE 1850

48. Statistics by counties—
Adams 248
Allen 250
Ashland 252
Ashtabula 254
Athens 258
Auglaize 260
Belmont 262
Brown 264
Butler 266
Carroll 268
Champaign 270
Clark 272
Clermont 274
Clinton 278
Columbiana 280
Coshocton 282
Crawford 284
Cuyahoga 286
Darke 288
Defiance 290
Delaware 292
Erie 294
Fairfield 296
Fayette 298
Franklin 300
Fulton 302
Gallia 304
Geauga 306
Greene 308
Guernsey 310
Hamilton 312
Hancock 314
Hardin 316
Harrison 318
Henry 320
Highland 322
Hocking 324
Holmes 326
Huron 328
Jackson 330
Jefferson 332
Knox 334
Lake 336

Lawrence 338
Licking 340
Logan 342
Lorain 344
Lucas 346
Madison 348
Mahoning 350
Marion 352
Medina 354
Meigs 356
Mercer 358
Miami 360
Monroe 362
Montgomery 364
Morgan 366
Morrow 368
Muskingum 370
Noble 372
Ottawa 374
Paulding 376
Perry 378
Pickaway 380
Pike 382
Portage 384
Preble 386
Putnam 388
Richland 390
Ross 392
Sandusky 394
Scioto 396
Seneca 398
Shelby 400
Stark 402
Summit 404
Trumbull 406
Tuscarawas 408
Union 410
Van Wert 412
Vinton 414
Warren 416
Washington 418
Wayne 420
Williams 422
Wood 424
Wyandot 426
49. Soil types of Ohio 428

"The Raising"

BULLETIN
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THE AGRICULTURE OF OHIO

PREFACE

BY THE DIRECTOR

The original act establishing the Ohio Agricultural Experiment Station declares, "That for the benefit of practical and scientific agriculture, and for the development of the vast agricultural resources of the State, an Ohio Agricultural Experiment Station is established." The Ohio Station was the fifth institution of its kind to be established in the United States, and for many years it was itself an experiment, for the work it was to perform was a new industry in the world, and it was necessary first to learn how to experiment. That it has measurably succeeded in accomplishing its purpose is indicated by the increasing support it has received, but for many years those in charge of its work have experienced an increasing realization of the fact that, if the Station is to serve all the people of Ohio adequately, it must possess a more complete and accurate knowledge of the agricultural conditions of the various sections of the State than is now available.

The geological survey of the State has been of great service in delimiting the surface rocks and glaciated areas, and has furnished many helpful suggestions respecting the soils of the State; enough to demonstrate the necessity for as careful and thorough a survey of these soils as has been made of the rocks and minerals, and this survey has been undertaken, first in the form of a reconnoissance survey, completed in 1912, and since then in a more detailed survey which is now in progress, this work being conducted in cooperation with the Bureau of Soils, U. S. Department of Agriculture.

But experience has shown that the human history of a soil may have a more important bearing on its present condition than the source or manner of its formation. The crops that have been grown,

the treatment they have received and the yields which have been obtained are factors that must be known before intelligent advice can be given respecting further treatment.

In 1800 the territory included in the present boundaries of Ohio was practically an unbroken forest. There were a few small areas of marsh or semimarsh prairie, and the Indians were growing corn in a few little fields cleared from the forest, but the combined area of prairie and cornfield was probably less than that of the smallest county in the State today.

By the middle of the century the pioneer's ax had so far removed the forest that more than 4,000,000 acres were under the plow. Since 1850 the township assessors have been charged with the collection of statistics giving the area and production of the principal crops grown in the State, which have been published in the annual reports of the Secretary of State and republished in those of the State Board of Agriculture,[1] which constitute a mine of information of incalculable potential value, if arranged in systematic, comparable form, but which in their present condition are of no more value than the unworked veins of coal in the hills.

The time has come when the working of this mine is essential to the highest usefulness of the Experiment Station, and to all who would have an intelligent understanding of the agricultural conditions, resources and opportunities of Ohio.

As a necessary prelude to the study of these statistics an historical reconnoissance of the agriculture of the State, covering the period from the first advent of the white man to the beginning of the collection of agricultural statistics, has been made by W. A. Lloyd; acting under the joint direction and support of the Ohio Experiment Station and the Office of Farm Management of the U. S. Department of Agriculture. This reconnaissance is the subject of Part I of this bulletin, and will be followed by a detailed statistical study of the State, covering the 60 years, 1850-1910.

[1]During recent years the first publication has been made by the State Board of Agriculture.

PART I

A HISTORY OF THE AGRICULTURE OF OHIO

W. A. LLOYD

IMPORTANCE OF THE STUDY OF AGRICULTURAL HISTORY[1]

We have been so busy in investigating present agricultural phenomena and in applying the results of research to existing conditions that we have but little time to look backward and to give any close scrutiny to our agricultural past. We know, in a general way, something of the agriculture of the Roman Empire as we glean it from her poets, historians and agricultural writers. We know hardly more of the agricultural history of Great Britain and Germany, from which countries came most of our American agricultural population. In Ohio, we know but little of the agricultural history of New England, Pennsylvania, New York and Virginia, from which our State was largely peopled; and even of the agricultural development of our own State our knowledge is general rather than definite and accurate.

England has produced several scholars who have written learnedly and interestingly of the agricultural development of their country; but, as yet, only a few of our agricultural leaders have appreciated the necessity of making detailed studies of the agricultural development of particular communities. Dr. L. H. Bailey, in his "Country Life Movement," and again, in his "State and the Farmer," has recognized this need. Dr. T. N. Carver, in his "Principles of Rural Economics," devotes a chapter to the subject of agricultural history; and, in Bailey's "Cyclopedia of American Agriculture," he outlines this subject more fully. One section of the Carnegie Institution of Washington, in connection with its collection of material for an economic history of the United States, is devoting some time to the study of the history of American agriculture. For the most part, however, the field is as yet unexplored. Recently the term "agricultural history" has found a place in farm-management literature. Local agricultural history has a most inti-

[1]Extracts from a paper by the author, read before the meeting of the American Farm Management Association, at Washington, D C, January 23, 1913

mate relation to the problems of farm management; for, in the solution of these problems, we need to know as definitely as possible all that pertains to the agricultural development of the region to which we are seeking to apply the results of other farm-management field studies.

The economic aspect.—If an individual farm is made the unit of study no agricultural investigator will gainsay the necessity of detailed accurate historical data regarding that particular farm before any plans are formulated for its improvement. The crops that have been grown, the systems of crop rotation that have been followed, the livestock that have been produced, the drainage, the fertilization, and the like should be known; and, the longer the time over which we have accurate knowledge of these facts, the more definitely can suggestions for improvement be given. If we could have such historical data concerning any one farm through a period of 50 years or more and could study them in their relation to soil, transportation and markets, the farm would then become an interesting organization instead of a mere plat of ground.

There are matters of community interest relating to the development of the agriculture of a region that, while of only passing interest at the time of their occurrence, become in the lapse of years equally important events. The introduction of a purebred animal may often pass unnoticed at the time; yet to it may trace the whole livestock industry of a community. The matter of the local development of agriculture, as retarded or stimulated by the character and change of population, by markets, by transportation, by soil and by climate, is not only of intense interest but of fundamental, practical value to the agricultural economist and extension worker.

The sociological aspect.—This study has a sociological as well as an economic aspect. Thus far in America we have been chiefly concerned in the building of cities. We have magnified the city and its history. Urban people have developed a proper civic pride, and the average city resident is conscious of his city's traditions. Why should we not have the same pride in rural traditions? Dr. Bailey well says, "The open country as well as the city has its history." The site of the first schoolhouse or the first church, the farm where the first Shorthorn bull was owned, the home of a noted dairy cow, the farm where the first silo was erected—these are traditions worth cherishing. All the heroes are not of the battlefield and forum. The man who improves the livestock of a community or gives to it a better variety of corn is as deserving of praise as he who

"plucks glory at the cannon's mouth." Nor can we expect to have happy and contented people in the country until we have a people genuinely patriotic for the things of the country, and nothing can more quickly stimulate such patriotism than a knowledge of the history of the open country.

The scope of the subject.—It may be well at this point to set out just what is contemplated by such an historical agricultural reconnoissance. By it is meant a study of the agricultural development of the State as ascertained by field investigations of agricultural units, showing the beginning and the advance or retrogression of all the various enterprises incident to the farm, and their modification by the character of population, the development of transportation and markets, the introduction of machinery; and the relations of these enterprises and modifying factors to each other. The study also contemplates an examination of the literature bearing on the agricultural development of the State and its various counties, and a comprehensive compilation and analysis of all available statistics both State and Federal, relating to agriculture.

Such a study as this should enable us to recognize sociological and economic forces, which are not always self-evident and have acted sometimes with but little regard to soil, climate, markets, transportation and the other factors usually supposed to govern agricultural production.

The influence of the character of the population on the type of agriculture has not always been recognized. It sometimes happens that the agricultural practice of a region is not altogether controlled by conditions of soil, climate, transportation or markets, but to no small degree by hereditary influences and racial instinct. The Yankees of the Connecticut Western Reserve and of the Ohio Purchase, the Southerner of the Virginia Military Lands, the Pennsylvania Dutch of the "backbone" counties, the Welsh settlements, the Quaker communities and the Germans in the northwest have all exerted a marked influence on the farm practice of the State of Ohio.

THE SETTLEMENT OF OHIO

The settlement of Ohio was no weakling's task. It was not a prairie state, nor was there gold in the hills to stimulate the spirit of adventure. Wild animals were to be killed; wild men were to be driven back, and a forest was to be felled before the pioneer could begin his little frontier farm. The pioneer was a wilderness con-

queror, not in search of wealth, but anxious only to found a home; and this fundamental idea has always had a great influence on our agriculture. Ohio farmers are men whose hereditary instincts are those of home builders rather than those of fortune hunters or business men.

Character of the population.—In the northeastern part of Ohio, or the old Western Reserve of Connecticut, is the "Yankee," who brought with him a cheese hoop from his New England home. Wherever he went, he made cheese. Belpre, in Washington County, another New England settlement, was a noted cheese-producing district before Ohio was a state. The Western Reserve has been consistently the dairy section of the State. There the old homemade cheese trade developed; there the cheese factory had its beginning; there the creamery had its development, and there is now the market-milk center of the State. The western farmer, who is now supplanting the Yankee in some of the northeastern counties, is tile-draining the land, which is a good feature, and is trying to raise corn and hogs, which is probably a poor practice in this section.

Our next stream of population poured through the central counties by way of the National Road and brought many elements. Descendants of pioneers from Pennsylvania, Virginia and New England are in this section adjacent land owners, and each is unconsciously following his ancestral agricultural instincts; that is, the agriculture of these counties, which is usually referred to as general, is mixed rather than general. It is often possible to determine by the external character of the farm whether the grandfather of the present owner was a Yankee or a Pennsylvanian.

The Pennsylvania Dutch, frugal, industrious and thrifty, poured like a mill stream into the "backbone" counties. They brought with them livestock and wheat farming from Lancaster, Bucks, York, Washington and other Pennsylvania counties; and Columbiana, Stark, Wayne and Richland Counties became the great wheat-producing center in Ohio.

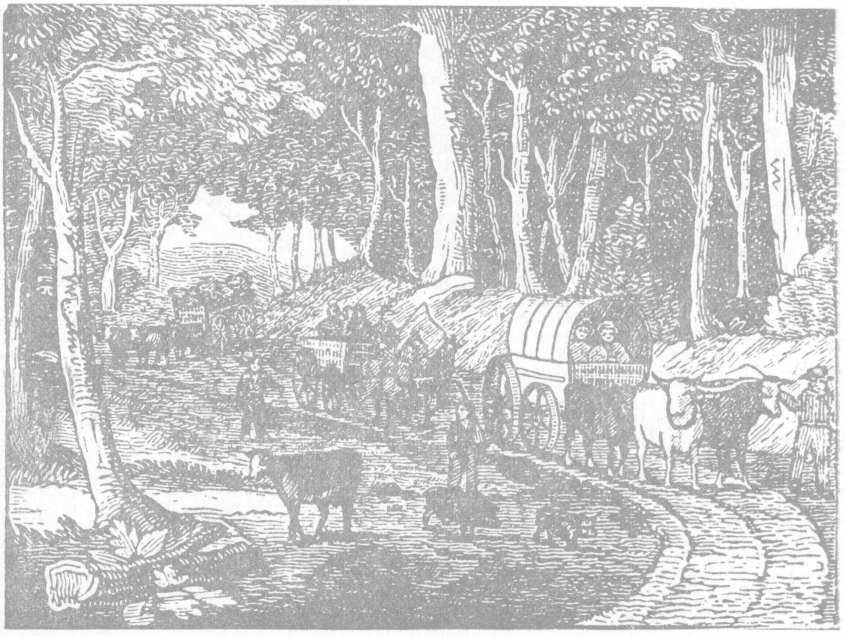
The Swiss, from German-speaking, Switzer-cheese-producing cantons of Switzerland, came into Monroe, Tuscarawas and Holmes Counties by way of Pennsylvania, and transplanted there the small, cooperative, Switzer-cheese factory. For 70 years they have been making Switzer cheese. Their market is now in New York and Philadelphia.

The Virginian brought his livestock and his large-farm ideas to the Virginia Military Lands, which became the tenant-farming,

livestock-producing district of the State. Farms of 1,000 to 10,000 acres were common. He raised fast horses, chased foxes, bred Shorthorn cattle and lived well. Even today in Washington C. H., Hillsboro and London one can catch the atmosphere of the Old Dominion.

The Kentucky "Hill Billy" from across the Ohio River settled in the hills of Adams, Brown and Clermont Counties and developed the great tobacco-producing section of the State.

When Datus Kelly sold 5 acres of land on Kelly's Island at $50 per acre to a "Dutchman," the people were indignant at what they thought was robbery; and when the German, from a wine-producing province of the Rhine, set the area to grapes, the people thought he was crazy; but other Germans from the same province followed, and Kelly's Island and the Lake Shore became the wine-producing center of the State. The hop industry, which once flourished in certain localities in Ashtabula, Lake and other counties, was transplanted by immigrants from Otsego County, N. Y. In these and other ways the influence of population on agriculture is apparent.



"The Path of the Pioneers"
(from The Western Almanac, 1842)

Other factors affecting Ohio agriculture.—Other influences affecting the agriculture of the State were the invention of the steamboat, the Ohio canal system, the building of railroads, the growth of cities, the development of manufactures, the introduction of machinery and improved livestock, the development of the great West, the Civil War, the effects of legislation, the increase of land values, the scarcity of farm labor and the progress of agricultural education and experimentation. The investigation and philosophical analysis of these factors is the domain of agricultural history.

A HISTORY OF THE AGRICULTURE OF OHIO[1]

The agriculture of Ohio is a development of little more than a century. Indeed, in its commercial aspect it covers a much shorter period, its more important phases having developed within the recollection of men yet living. The student of this subject is thus fortunate in being able to get the viewpoint of a few of those who, almost from the beginning, have had to do with the making of the State's agriculture.

[1]This investigation was undertaken by the former Department of Cooperation of the Ohio Experiment Station in cooperation with the Office of Farm Management of the U. S. Department of Agriculture as a part of an agricultural survey of the state of Ohio. It originally contemplated an historical reconnoissance of the agriculture of the State from the date of settlement until the present time and presented in its development three distinct lines of study: A library investigation, a statistical compilation and a field study.

1. A Library Investigation. The investigation of all literature bearing on the agricultural development of the State is in itself a formidable undertaking. It presupposes a thorough familiarity with the State's political history as well as a knowledge of its climatic, geological, topographical and soil characteristics. The literature of the subject is scattered through hundreds of volumes, consisting of State and Federal agricultural reports, books of travel and biography, county histories and files of newspapers. Neither time nor resources permitted a thorough exploration of this field by the author. So far as possible, original sources have been investigated. Particular thanks are due to the librarians of the following institutions for making available the books and manuscripts of their collections and for their kind assistance: The Ohio Archaeological and Historical Society, Columbus, Ohio; The Ohio Philosophical and Historical Society, University of Cincinnati, Cincinnati, Ohio; Miami University, Oxford, Ohio; Ohio University, Athens, Ohio; Ohio State Library, Columbus, Ohio; Congressional Library, Washington, D. C, and the small county library associations throughout the State.

2. A Compilation of Agricultural Statistics. The first collection of statistics relating to agriculture was embraced in the Sixth Census (1840). These statistics have been continued and much expanded and elaborated in each decennial census since. Beginning with 1850, the State Board of Agriculture has each year collected some statistics regarding agriculture. Gradually these have become more extended and more complete. The Bureau of Crop Estimates of the U. S. Department of Agriculture and the files of the Cincinnati Price Current are also valuable sources. Other fragmentary statistics exist of more or less value in the files of various publications. The statistics collected by the State Board of Agriculture through the various township assessors were taken as a basis of this study, and the grouping and tabulating of the data were carried forward with the assistance of W. L. Elser, assistant in the Department of Cooperation.

3. A Field Study. This was undertaken for the primary purpose of gaining acquaintance with the agriculture of the State in its local manifestations by means of personal interviews with a few people in each county, whose long residence in the county and whose close association with farming interests made them original sources of information with regard to much that pertains to the development of agriculture during the last 50 years. The preparation of a history of the agriculture of each county of the State is an undertaking of great importance. It will require much patient investigation; but, the impetus it would give to a genuine patriotism for the things of the country, and the better understanding it would furnish for the proper organization of agricultural and social forces, would make it well worth while. It is to be hoped that with the organization of county farm bureaus and the appointment of resident county agricultural agents, who will assume leadership in all agricultural matters in the county, this important work may be consummated

The connection of the author with the agricultural survey terminated when he took up work with the U. S. Department of Agriculture in July, 1913.

In the consideration of the agriculture of the State, certain developments seem naturally to group the treatment in three great epochs which may be further subdivided into a number of fairly distinct periods.

OUTLINE DEVELOPMENT OF OHIO AGRICULTURE

I. Epoch of Preparation—
   1. Period of the Aborigines: (—— to 1788.) From earliest times to the settlement of Marietta.
   2. Period of the Pioneers: (1788 to 1832.) From settlement at Marietta to the opening of the canals.

II. Epoch of Formation—
   1. Period of Extension: (1832-1865.) From the opening of the canals to the close of the Civil War.
   2. Period of Development: (1865-1900.) From the close of the Civil War to the culmination of reorganizing forces through the State Board of Agriculture, the College of Agriculture and the Agricultural Experiment Station.

III. Epoch of Stabilization—
   1. Period of Reorganization: (1900——.)
   2. Period of Cooperation:

EPOCH OF PREPARATION

The great epoch of preparation reaches back to the unknown time when the Indians first penetrated the wilderness, and includes the coming of the white man; his struggle with the Indian for mastery and the gradual extension of white settlement over the State. The epoch closes with the opening of the interior of the State to markets through the development of the canal systems.

The period of the aborigines.—The first part of this Epoch of Preparation, or the Period of the Aborigines, is largely a prehistoric period. But little is known of the agriculture of the recent Indians; and, concerning the customs of the tribes which preceded them and whose monuments are so numerous in the State, we are left to conjecture. The agriculture of the Indians, though crude and primitive, is historically important, because, in many ways, it was a prototype of the agriculture of the pioneers.

The pioneer period.—The second part of the Epoch of Preparation, or the Period of the Pioneers, includes almost a half-century, during which the white settlers accomplished much of the work which had to be done before anything more than a purely self-sufficing agriculture was possible. A great forest which covered the State from lake to river was inhabited by wild beasts and by men almost as wild. Before any settled agriculture was possible, the forest was to be felled, the wild beasts exterminated, and the Indian occupancy contested and extinguished. Even then, with a mountain barrier to the east, a lonely, unsailed sea to the north, an

unbroken wilderness to the west and a distant, uncertain market far to the south, nothing but the most meager, self-sufficing agriculture was possible. Facility of transportation was the magic key which was to unlock the storehouse of agricultural possibilities and make potent the virile forces of the rising state. Without this key stagnation was inevitable and stagnation did overtake the West. To escape from it and to make possible future extension and development was the second great task of the pioneer. These two duties—conquering the wilderness and overcoming its isolation—occupied the attention of the Ohio farmers from the settlement at Marietta in 1788 to the opening of the State canal system in 1832.

THE EPOCH OF FORMATION

The second great epoch, that of formation, which begins with the opening of the interior to markets through the canal system, may be said to close about 1900, at which time the reorganizing forces affecting agriculture began exerting a measurable influence.

The period of extension.—The first part of the Epoch of Formation was a sort of post-pioneer period, during which agriculture was rapidly extended over nearly the whole State. This was made possible by the development of markets through the extension of the canal system, the building of railroads and the opening of wagon roads generally throughout the State. During this period the agricultural population increased rapidly, and new and foreign elements were introduced into it. The cleared area of the State was increased greatly and the agricultural output multiplied manyfold, but the type of farming remained for the most part unchanged until about 1865, when economic causes brought about a change in both type and method of farming.

The period of development.—About 1865 the agriculture of the State began to be affected by a number of new influences. Farm machinery, which had been introduced but slowly before the Civil War, became a necessity when Ohio's farm boys by the thousands answered the call to arms. The mature farm-owners did not go to the war in great numbers, as is indicated by the increased crop production during the years of conflict. To make this possible, they bought labor-saving machinery, which about this time began to be greatly improved. Many of the returning soldiers answered the call of the West. The industrial development of the State, which began under the favorable legislation of the Civil War, was now greatly accelerated; and the State, largely agricultural in 1860, became after the war agricultural and industrial. Improvement in livestock,

which up to this time had been sporadic, now became more general. Many purebred herds were established, and Ohio livestock followed Ohio men in the improvement of the West. Chemical fertilizers began coming into use during the seventies, and changes in the drainage laws of the State made possible the reclamation of thousands of acres of swamp land. These forces, and others which began operating about 1865, affected great changes in the development of agriculture during the third of a century that followed. Slowly farming was becoming commercialized; very slowly it was becoming a business as well as a life, though during the later years, owing to the tremendous overproduction of the West, it became a profitless business, culminating during the last decade of the century in the lowest range of farm produce and land values known since the close of the Civil War. Because of the almost epoch-making changes wrought by the use of machinery, however, it deserves the name of the Period of Development.

THE EPOCH OF STABILIZATION

The year 1900 has been taken as the beginning of a new epoch in Ohio agriculture, which may properly be styled an Epoch of Stabilization, because of the changed character of the operating forces.

The period of reorganization.—The country began about this time to awaken to the fact that there was no "farther West" for the American farmer to conquer. The increase in population since 1870 had been largely urban, while the rural population had declined in many counties and only in the northwestern counties was there any marked increase. Prices which had been ruinously low now began advancing. Land prices responded most of all to the upward movement. Farmers who all their lives had been barely "breaking even" and were glad if there was enough over to pay taxes and interest on the mortgage suddenly found themselves well to do from the unearned increment. Advancing land values, higher wage rates, and increasing prices for farm products, gave the farmer a new attitude toward the farm. Heretofore he had been concerned chiefly with exploiting it, with getting the most possible out of it, that he might be able to educate his children so that they could leave it. The farmer now began to look upon the farm as worth keeping as a heritage for his children, and as something worthy of conserving and improving.

The agricultural press, the farmers' institutes, the College of Agriculture, the Experiment Station, and the State and Federal

Departments of Agriculture were the agencies which most influenced the farmer in his changed attitude toward his business. The effect of these agencies wrought almost a revolution in farm practice. It is probably true that greater improvement has taken place in cultural methods and care of livestock since 1900 than in the century that preceded. The home and community life of the farmer is also undergoing striking changes. The interurban railway, the automobile, improved rural highways, the farm telephone and the rural free delivery have been highly important factors in the development of a new agriculture. Thus far the Epoch of Stabilization has been one of reorganization and readjustment to meet new economic conditions. Its chief manifestations have been specialization, intensification, a tendency toward more complete and more intelligent utilization of all the farm resources and the gradual development of a more businesslike system of farm management. This period (the present) may then with some justice be called a Period of Reorganization.

The period of cooperation.—We cannot lift the curtain and tell what lies beyond; but the reforming forces which are now reaching out to help the individual farmer are economic as well as agronomic, and the great changes of the future are likely to be not only better farming but better business, more profitable production and more economic distribution. The agricultural extension movement, through the teaching of agriculture in the schools, the county demonstration farms and the county agricultural agents, constitutes a new group of influences whose effect cannot yet be forecasted. They will probably hasten the Period of Agricultural Cooperation whose beginning is now only just discernible.

The dates limiting these periods of the history of the State's agriculture must be accepted as more or less arbitrary. Agriculture is slow to respond to influences of any sort; even to improved means of transportation, to which, more than to all else, it is indebted for its progress. There are no sharp lines of cleavage. Even yet, there is to be found in every county a little of the self-sufficing agriculture of the Pioneer Period—the log cabin, the ox team, the drop and cover method of planting corn, the primitive brush harrow, the grain cradle; and even the sickle, the flail, the spinning wheel and the loom were met with in the survey. Usually isolated and exceptional, these relics of the old days were in sharp contrast with their surroundings, but they still exist, not only as reminders of the almost forgotten past but as eloquent testimony to the tenacity with which the farmer clings to his habits. Agri-

culture from its most primitive type to its most advanced manifestation is found at times in surprisingly limited areas. Its history presents an evolution in which we are privileged to witness almost every phase of development. Improvement in transportation, the invention of machinery and the commercial and manufacturing development of the State have been the influences that have thus far affected it most noticeably, but even these influences have for the most part produced changes very slowly; gaining a little here and a little there; and only in the perspective of years can we see the potency of their influence. Part I of this bulletin, which is an introduction to the study of the agriculture of the State, will be devoted to a consideration of the Epoch of Preparation, or to the time before 1832, and will thus cover but two periods in the State's agricultural development, those of the Aborigines and those of the Pioneers.

THE ABORIGINAL PERIOD (—— to 1788)

THE PREHISTORIC FARMER

The mound builders.—Long before Ohio was explored by white men, its hills and valleys were populated by a strange people, who, from the character of their chief monuments, have been named Mound Builders. It is not the place here to speculate concerning the origin of this mysterious people but only to note from the archaeological investigations of their mounds, inclosures and graves, which are so numerous throughout central and southern Ohio, some evidence of their agricultural practices.

In the excavation of a prehistoric grave in the Madisonville cemetery (Hamilton County) there was discovered a quantity of shelled corn (3 or 4 bushels), as well as carbonized cornstalks and ear corn. This gives absolute proof that maize was known and cultivated in the Miami Valley hundreds, perhaps thousands, of years ago.[1] Prof. William C. Mills, curator of the Ohio Archaeological and Historical Society, in his explorations of the Baum prehistoric village site in Twin Township, Ross County, found quantities of corn in a subterranean "storehouse." The husked ears had been charred and were remarkably well preserved; both an eight- and a ten-row variety were discovered. In some of the pits were "storehouses" containing masses of shelled corn with portions of a woven bag attached. Beans (*Phaseolus vulgaris*) were found in abundance and dried fruit of the wild red plum (*Prunus Americanus*) together with quantities of hickory nuts, walnuts, hazelnuts and seed of the papaw

[1] *Madisonville Historical Society Report*, Part I, p. 27

and wild grape. From bones recovered, the dog appears to have been their only domesticated animal.[1] The numerous stone pipes found in the mounds would indicate a culture of tobacco. These remains give us a few hints as to the agricultural and food habits of this prehistoric people. While the origin, customs and final disappearance of these lost tribes, which constituted the State's first families, are a matter of conjecture, one of the few things certain, discovered by the antiquarians, is this evidence of their agriculture.

LATER INDIAN AGRICULTURE

Tribal distribution.—Many Indian tribes had at different times inhabited the Ohio country. Most of the ancient tribes, like the Eries, had been conquered or absorbed by the stronger tribes from the East and South. The close of the Revolution found the tribes distributed somewhat as follows: The Delawares were in the southeast along the Muskingum and its tributaries; the Shawnees, in the valley of the Scioto; the Miamis, in the valleys of the rivers of the same name; a part of the great Iroquois nation was along the Lake shore, and small bands of Wyandots and Ottawas were in the northwest. At the time of settlement (1788) there were probably not more than ten thousand Indians in Ohio.[2] This number, however, was greatly increased during the Indian wars that followed by accessions from western tribes. Their villages were mostly in the central, western and northern part of the State. The southeastern hill portion was their hunting ground and was visited each autumn by warriors in large numbers. During the summer it was almost devoid of Indian population.

Crops.—Whether the Indian was of the same or a distinct race from the Mound Builder, he had many of the same agricultural habits. Corn (maize) was his universal crop. The Indian warriors congregated in the villages during the summertime and followed the chase during the fall and winter. The cornfields and gardens were near the village sites and were of much greater extent than is usually appreciated.

Before the settlement of Ohio, the pioneers of Kentucky made annual expeditions into the Ohio country for the purpose of destroying the crops of the Indians and thus crippling their resources. In this expedition of July and August, 1782, against the Indians on the Miami and Mad Rivers, Colonel George Rogers Clark destroyed more than 200 acres of corn at the towns of Piqua and

[1] *Ohio Archaeological and Historical Society Publications*, XIII, 189, and XV, 61 ff
[2] *Ohio Archaeological and Historical Society Publications*

old Chillicothe, and enormous quantities of provisions were captured at Loramie's store on the same expedition. In 1790, twenty thousand bushels of corn was seized and burned at the headwaters of the Miami River.[1]

Perhaps the best idea of the extent of the farming operations of the Ohio Indians can be gathered from the following extract from the report of General Wayne to the Secretary of War on reaching the junction of the Auglaize with the Maumee on August 8, 1794: "We have thus gained possession of the great emporium of the West without loss of blood. The very extensive and highly cultivated fields and gardens show the work of many hands. The margins of those beautiful rivers, the Miami of the Lakes (Maumee) and the Auglaize, appear like one continuous village for a number of miles both above and below this place, nor have I ever beheld such immense fields of corn in any part of America from Canada to Florida."[2] It is further reported that more than four thousand acres of standing corn was destroyed by Wayne's army between Fort Defiance and the mouth of the Miami of the Lakes. After the defeat of the Indians at Fallen Timbers, several days were spent in destroying their crops. The cultivated crops of the Ohio Indians are said by travelers to have exceeded in variety and quantity those of any other equal area in North America. These crops consisted of corn, beans, peas, squashes, Indian cucumbers, pumpkins, melons, tobacco and possibly potatoes. Captives among the Indians say, "They have a kind of potato which, when peeled and dipped in coon's fat, tasted like our sweet potatoes."[3] This may have been the Jerusalem artichoke.

Fruit.—Of native fruits, the Indian used the wild strawberry, the cranberry, the papaw and the plum. Concerning the last both pioneers and travelers are enthusiastic with regard to its large size, color and excellent flavor. Red, yellow and purple varieties were found. The thickets were carefully preserved by the Indians. With the removal of the forest, these good varieties of native plums were destroyed by the devastation of the curculio. The Indians were not altogether confined to these fruits. Some of them planted and cared for extensive orchards of both apples and peaches in northern Ohio. Wayne during one of his expeditions cut down several thousand peach and apple trees.[4]

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[1] *Our Indian Wards*, p 86
[2] *Our Indian Wards*, p 84
[3] Col E L Taylor, *Ohio Archaeological and Historical Society Publications* VI, p. 85
[4] *Ohio Archaeological and Historical Society Publications*, VII, p 107

Maple sugar.—The Ohio Indian made extensive use of the rock maple for sugar making, the boiling beginning in February or March. The trees were tapped by notching them with a tomahawk, and the sap was collected in bark vessels or rough wooden troughs, a method which was adopted by the whites and little improved upon for more than half a century. The sap was reduced to sugar, mixed with bear fat and stored in skins. The Indians used it in cooking green corn and such other vegetables as they had.

Livestock.—Of domestic animals, the Indian originally had only the dog, but after the coming of the white men, he acquired horses and to a limited extent cattle, hogs and poultry. The horses he secured at times by means not altogether honorable. The horse was used only for the chase and as a pack animal, never for cultivating the field. The Indians occasionally made pets of other animals, but had not advanced in civilization sufficiently to make such animals useful. Rev. John Heckewelder, the Moravian missionary, mentions a pet female buffalo and calf among the Delawares on the Tuscarawas and that a few cattle were sometimes kept, as the Indians were fond of milk. The Moravian Indians (Delawares) on the Tuscarawas, under the guidance of the faithful Heckewelder made considerable progress in agricultural development, having settled homes, well-tilled fields, and many cattle, hogs and fowls, at the time they were murdered by the Pennsylvania backwoodsmen, March 8, 1782.

Moravian missionaries brought from New York to Gnadenhutten Mission, in 1772, seventy-one cattle of a Dutch breed with brown and black spots which had recently been introduced into New York from Holland. These cattle were given to the Delawares and were afterward raised by that tribe.

Missionaries.—The Moravians began their missionary work among the Indians in the Muskingum Valley as early as 1762, and here was developed the first settled agriculture in Ohio directed by white men. The Indians forsook the forest and the war path and became peaceable farmers and herdsmen. How different might have been the history of the next 50 years had the policy of Post and Heckewelder in dealing with the Ohio Indians been adopted instead of the war of extermination! It might have prevented the awful toll of 12,002 whites and 7,837 Indians that fell within the State before the Indians gave up the struggle.[1] Jacob Burnett, who was intimately acquainted with the Ohio Indians, gives the following

[1]The number of whites and Indians killed is from a careful investigation made by Warren King Moorehead, *Ohio Archaeological and Historical Society Publications*, VII, p. 108.

eloquent testimony respecting their capacity to adopt agricultural habits:

That unfortunate race (the Indians), who seem to have been destined to utter extinction, have been misrepresented and slandered, no doubt to palliate the guilt of the outrages which have been perpetrated against them. Among other falsehoods, it has been asserted, confidently, but without a shadow of argument or fact to sustain the assertion, that they cannot be brought to a state of civilization, or be induced to form communities and engage in the pursuits of agriculture and the arts, in consequence of some physical difference between them and the Anglo-Saxon race. This hypothesis is contradicted by experience, which has abundantly shown that the two races, when placed in the same situation and acted on by the same causes, have invariably resorted to the same expedients, and pursued the same policy.

This averment is sustained by a reference to the white people, who have been taken prisoners in childhood, and brought up among the Indians. In every such case, the child of civilization has become the ferocious adult of the forest, manifesting all the peculiarities, tastes and preferences of the native Indian. His manners, habits, propensities and pursuits have been the same; his fondness for the chase, and his reluctance to labor, the same; so that the most astute philosophical observer has not been able to discover any difference between them, except in the color of the skin; and in some instances even this distinction has been removed by long exposure to the elements, and the free use of oils and paints. There have been cases in which the children of white parents, who have been raised among the Indians from early infancy, have been taken home to their relatives in middle life, but have refused to remain, and have returned to the tribe in which they were brought up, whose habits, feelings and mode of life they preferred.

One case of this kind occurred within the knowledge of the writer. A female, captured in infancy, and reared by the Indians, was brought in by them at the treaty of Greenville, and sent home to her relations in Kentucky. She soon became so discontented and restless, that in spite of all their efforts, she left them, returned to her former associates, and was again happy.

The attempts that have been made, at different times, to improve the minds and cultivate the morals of these people, have always been attended with success. Witness the Cherokees of Georgia, and the Wyandots, at Upper Sandusky. From 1821 to 1828, inclusive, the writer of these sketches passed through the latter settlement almost every year, and occasionally twice a year, which gave him an opportunity to know that they were devoting themselves principally, and almost exclusively, to agriculture and the arts; and were making rapid advances in civilization, when the policy of government compelled them to abandon their farms, dispose of their stock and other property at a great sacrifice, and migrate to the "Far West."

The imaginary physical difference, pretended to exist between the Europeans and the native of this continent, vanishes at once, on an unprejudiced comparison between the civilized white man, and the civilized, educated Indian. In what respects, it may be asked, have Ross, Boudinot, Hicks, Ridge and others, differed from the educated men of our own race? Their moral sense is the same—they manifest the same taste;—their preferences and dislikes—their habits and manners are the same; and their reasoning powers are equally

strong and active. Inasmuch, then, as the reclaimed, educated Indian, becomes assimilated to the white man; and the European brought up from infancy among the Indians, becomes identified with them, this alleged difference cannot be real,—it must be imaginary.[1]

Farming implements.—The Indians had but few agricultural implements. A sharpened stick, a bone from a dead animal, a flint hoe or a shell served his purpose for digging the loose earth; heavy iron hoes were later secured from the traders. Most of the labor in the fields was performed by women and children, who planted the crop, cultivated it, guarded it from marauding animals and birds, gathered and stored it. It was considered beneath the dignity of an Indian hunter or warrior to labor in the field.

The corn feast.—The green-corn dance was the principal festival of the Indians. It was celebrated in August and lasted 12 days. "The Indians attend from all quarters with their families, tents and provisions, camping around the council or worshipping house. The animals killed for sacrifice are cleaned, and the head, horns and entrails are suspended on a large white pole with a forked top which extends over the top of the house. The women having prepared the new corn and provisions for the feast, the men first take some of the new corn, rub it between their hands, then on their faces and breasts and the feast begins, the great chief having first addressed the crowd thanking the Great Spirit for the return of the season. On these occasions the Indians are dressed in their best, and the whole nation attends from the greatest to the smallest. The quantity of provisions collected is immense, every one bringing according to his ability. The whole is cast into a pile and distributed during the continuance of the feast among the multitude by the leaders appointed for the purpose."[2] At the corn feast, crimes were forgiven, and the children born during the past year were given names.[3]

Indian character.—In times of peace, the men devoted themselves to the chase. They procured in this way the skins for clothing and meat supply and the skins which were traded to the whites to supply the needs of the wigwam. This was not an unfair division of labor. To engage in the work of the field would have brought the warriors into the contempt not only of their companions but of the women as well. The warriors were not devoid of affection for relatives and often suffered great fatigue, endured cold, suffered privation and braved danger for the sake of their families. Their

[1] *Notes of the Early Settlement of the North-Western Territory*, p. 385.
[2] Atwater, *Transactions*, p. 286.
[3] *Ohio Archaeological and Historical Society Publications*, VI, p 85.

failure to work in the field does not convict them of laziness, though it probably did prevent their advancement.

The agricultural system of the Indian was to some extent communistic. The year's harvest was put in a common storehouse, and from it the whole tribe was fed. The environment and disposition of the Indian made any other system impossible. Year after year he planted the same plot in corn, until he had exhausted the fertility of the soil, when he sought a new home and built a new village. In doing this he was setting an example which a few American farmers have hardly yet abandoned. There were exhausted fields, "abandoned farms," in Ohio long before the arrival of the white man. Many of the small openings in the forest in western Ohio doubtless marked the spot of abandoned cornfields of the Indians.

THE PIONEER PERIOD (1788-1832)

The French in Ohio.—The French were the first to establish themselves in the region south of the Lakes. As early as 1667, LaSalle was in Ohio and, with the possible exception of the wandering sailors of the disbanded Hawkins expedition of 1583, he was the first white man to penetrate this wilderness. The French, however, did not plant colonies or establish settlements in this region. They did not covet the Indian hunting grounds, but contented themselves with establishing trading posts and opening commercial intercourse. They married the Indian maidens, lived the life of the woods and cultivated with the natives relations of intimacy and friendship. So far as the agricultural development of the region is concerned, the French occupation effected nothing.

The English occupation.—As a result of the French and Indian war, the English came into undisputed possession of the Ohio Valley, which had long been claimed by them under the various colonial charters. It was a part of French diplomacy that the cession of Canada to Great Britain should so strengthen the seaboard colonies as to make certain their separation from the mother country. England quickly recognized this danger and began restrictive legislation and entered into treaties with the Indians to prevent the extension of settlement west of the Alleghanies. These acts had their culmination in the Quebec Act of 1774, by which the territory from Hudson Bay to the Ohio River became a part of the Province of Quebec. These restrictive measures retarded development of the Ohio country and embittered the colonists, who were already coveting the lands of the Indians. This western land policy of Great Britain was one of the causes of the Revolutionary War.

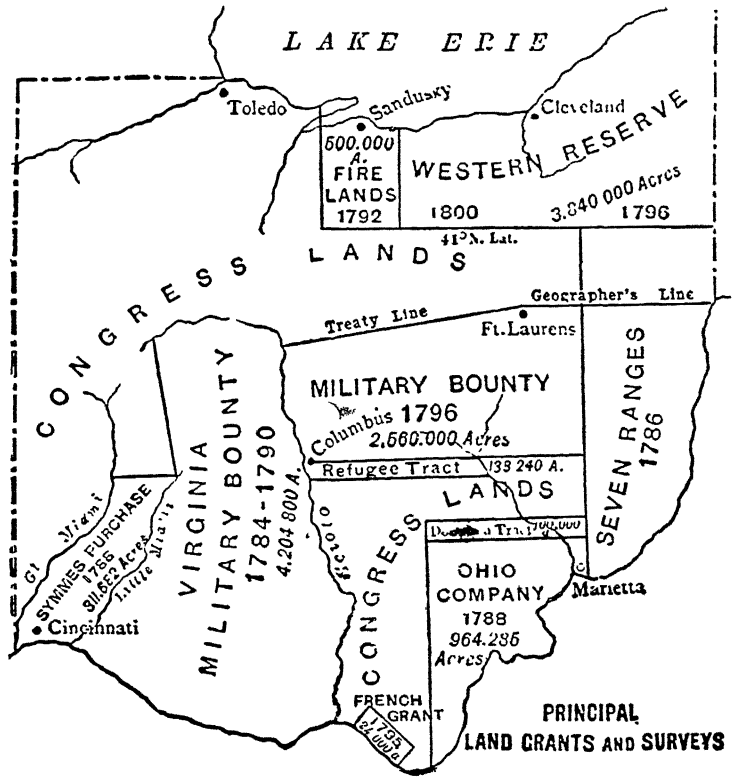
The first white farmers.—During the Revolution many families from western Pennsylvania "squatted" on the lands west of the Ohio River and formed settlements along it from the mouth of Yellow Creek to the Miami River, as well as along the Muskingum, Hocking and Scioto Rivers. They made an attempt at organized government and respected each others' "tomahawk claims," so-called because the corner trees were notched with a tomahawk. Ensign John Armstrong reported early in 1785 to Colonel Harmar that there were one thousand five hundred persons (whites) on the Miami and Scioto, three hundred families on the Hocking and Muskingum and that along the Ohio there was scarcely a bottom without settlers. So well established did these settlers feel that in this year a call was issued by John Emerson to the settlers west of the Ohio to elect delegates to a constitutional convention. These "squatters" were the subject of much complaint by the Indians, and the Government made repeated attempts to dispossess them. They were, in fact, repeatedly driven off, only to return with the withdrawal of the troops. They were in reality the first permanent settlers in Ohio. There are in southeastern Ohio today many families that trace lineage to them. Though their principal business was trading with the Indians, they made "clearings" and began a settled agricultural life. The active and authorized settlement of the State did not begin, however, until the organization of the Northwest Territory, in 1787.

COLONIZATION AND THE PUBLIC LANDS

Most of the eastern states claimed title to western lands under their colonial charters, and these were a subject of much discussion and dissatisfaction under the Confederation. After years of wrangling, the states all finally ceded their public land to the Federal Government; Virginia and Connecticut, however, retaining certain reservations which fell within the present limits of Ohio. A knowledge of the various kinds of public lands within the State is necessary to an understanding of the distribution of the various elements which entered into the State's population and the influence they had on its agriculture. The various classes of land, briefly described, are as follows:

The Ohio Company's Purchase.—The Federal Government first established a revenue policy with regard to the sale of the public lands in order to supply funds for an almost bankrupt treasury, and under it land was sold only in large tracts. This gave rise to various colonization schemes of which the Ohio Company, the

Symmes Purchase and the Scioto Company were examples. Primarily, these were speculative companies, whose business it was to secure settlers and thus sell their lands. The New England Ohio Company, organized by General Rufus Putnam, of Massachusetts, came, however, with a "ready-made" government to affect not only their own purchase but the whole Northwest Territory. This company bought from the Federal Government a tract of 964,285 acres north of the Ohio River comprising the present counties of Meigs



and Athens and a part of Gallia and Washington; Manassah Cutler and Winthrop Sargeant acting as agents of the Ohio Company in the selection of lands. It was apportioned into 817 shares of 1,173 acres each. The first settlement on the purchase was made at the mouth of the Muskingum in 1788.

The selection of land by the agents of the Ohio Company proved rather unfortunate; for, while it contains small areas of fertile river bottoms, for the most part it is broken by rocky and precipitous

hills not well adapted to agriculture. The river-bottomlands along the Ohio, Muskingum and Hocking Rivers were first settled. The hill land for a long time was considered worthless and remained a hunting ground for the Indians. Not until 1800 did the elk and the buffalo leave the Muskingum;[1] a young buffalo, believed to be the last, was taken on Raccoon Creek near Athens in 1799. For 10 years thereafter the Indians returned each autumn to hunt in the forest-covered hills back of Marietta. The last big Indian bear hunt was held in 1810. The first man who established a farm outside the stockade was Levi Chapman, who settled on Duck Creek in 1794. In a way he may be considered Ohio's first farmer.

Had the advice of Ebenezer Zane, the noted pathfinder and pioneer, been followed, the settlement would not have been made at Marietta. He was consulted by the agents of the Ohio Company as to the respective merits of the lands at the mouths of the Muskingum, Scioto and Miami Rivers. Zane advised strongly against the Muskingum and in favor of the Miami; and the agents hurried back to New England and reported in favor of the Muskingum, as it was thought Zane had this in mind for his own colony. For once Yankee shrewdness went astray. For a few years following the settlement at Marietta, "settlers" from New England and New York poured into the West, but the stream almost ceased with the breaking out of the Indian wars and was not resumed until after the treaty of Greenville, when Marietta was again filled with adventurers from the East, seeking their fortunes in the Ohio country. Most of them passed on down the river to the Scioto and Miami. In order to induce settlement the Ohio Company offered to donate 100 acres from each share to actual settlers.[2]

The Symmes' Purchase.—The Symmes' Purchase embodies a tract of 311,672 acres on the Ohio River between the Great Miami and Little Miami Rivers. It was patented to John Clive Symmes of New Jersey in 1788, the purchase price being 67 cents an acre. Symmes was much more fortunate in the location of his colony than the Ohio Company, as this tract contains some of the best land in the State. It was, however, on the direct warpath between the Kentucky settlements and the hostile Indians of Ohio and became known as the "Miami Slaughterhouse." The first settlers were from New Jersey and Pennsylvania, and were soon joined by a considerable southern migration. Not until after Wayne's victory in 1794 and the consequent Greenville Treaty was it safe to venture

[1] S. P. Hildreth, *Pioneer Settlers of Ohio* (1852), p. 409.
[2] Ibid. p. 104.

far from the stockade. Following the treaty, the country north of the mouth of Mad River rapidly became filled with eastern and southern pioneers.

The Connecticut Western Reserve.—The state of Connecticut, in the settlement with the Federal Government of her claims to western lands, retained 3,800,000 acres in the northeastern part of Ohio. These lands extended from the Lake south to 41° N. (lat.), and from the Pennsylvania line west 120 miles. A tract of one-half million acres in the extreme western part of the Reserve was set aside by Connecticut for the benefit of certain fire sufferers in the Revolution; these are called Fire Lands and comprise the present counties of Huron and Erie. Connecticut sold her lands in 1793 to the Connecticut Land Company at 40 cents an acre. The 48 original purchasers were empowered to give deeds. Fabulous stories were told in New England of the fertility of these lands. However, settlement was slow until after 1814, when a stream of immigrants poured into the Reserve from all New England and New York. The lands east of the Cuyahoga River were settled first. No settlements were made in the Fire Lands until 1810, and none of any importance until after the War of 1812.

The Virginia Military Lands.—A tract of 4,204,800 acres of land, lying between the Scioto and the Little Miami Rivers, was reserved by the state of Virginia at the time of the cession of her western lands to the Federal Government, in order to satisfy the land bounties due the Virginia troops in the Revolution. There was much speculation in these land warrants and the settlement of the territory was much retarded as a consequence. The land was sold as a rule in unusually large tracts, some "plantations" containing several thousand acres. It was at first peopled almost exclusively from the South, Virginians and Kentuckians predominating.

No colonization scheme was organized by Virginia for the sale of her Ohio lands; those holding land warrants had their entries located by a principal surveyor or his deputy, who usually received a part of the land located for completing the survey. This frequently amounted to from one-third to one-half of the land located. Surveying, though attended by many dangers, was a profitable business, and many of the early surveyors became wealthy men. Anyone holding a warrant was free to make an "entry" of land anywhere in the district not previously located and in any shape he desired. There was much dispute as to what constituted an "entry" that would give one a right to possession. It seems to have been decided finally that an entry was simply a notice in writing by anyone hold-

ing a warrant, to the principal surveyor or his deputies, of an intention to survey and appropriate a particular tract. In order to make an entry available, it was necessary that it be followed by a survey, which must be approved by the surveyor and by him certified to the general land office.

George Washington, as general of the Army, held land warrants in Ohio and, through John O'Brannon, a noted surveyor, located 4,051 acres of land in what is now Clermont County. "Squatters" settled on this land and Washington never contested their claims. Owing to the uncertainty of many of these surveys and the extremely crooked boundaries there was much overlapping. This rendered titles insecure and later caused much litigation.

Congress lands.—Congress lands were so termed because the deeds to them were executed by the Federal Government in conformity to laws passed from time to time by Congress. For the purpose of selling these lands, as the State developed, land offices were opened at various points. Chillicothe, Marietta, Steubenville, Wooster, Zanesville and Cincinnati had such offices.

The Congress land was at first sold only in large tracts, 640 acres being the smallest amount that could be sold to one person. However, the land sold so slowly that by 1800 less than 1,500,000 acres had been disposed of, and Congress, by an act passed in May of that year, reduced the minimum amount that could be bought to 120 acres and fixed the price at $2 an acre, only one-fourth of which it was necessary to pay at the time of purchase. In 1820 the minimum amount of land was reduced to 80 acres and the price still further reduced to $1.25 an acre.

The Seven Ranges.—The Seven Ranges are the part of the Congress lands first surveyed west of the Ohio River. They are located along the river, north of the Ohio Company's Purchase.

United States Military Lands.—A tract of land was apportioned by Congress in 1796 to satisfy claims of soldiers of the war for independence. It comprised 2,560,000 acres in the east-central part of the State. After the time expired for the location of the land warrants, this tract was disposed of in the same way as the Congress lands. There was much speculation in land warrants, and comparatively few of the original holders of the warrants actually settled on the land.

MINOR LAND GRANTS AND DIVISIONS

The Refugee Tract.—A tract consisting of one hundred thousand acres lying in a narrow strip 4½ miles wide immediately south

of the United States Military Lands, extending east from the Scioto River at Columbus for a distance of 48 miles, was granted by Congress to Canadians who assisted the Americans during the Revolution.

The Donation Tract.—A tract of one hundred thousand acres north of the Ohio Company's original purchase, comprising what is now the northern part of Washington County, was granted to that company by Congress on consideration that one settler be placed on each 100 acres within 5 years. One of the conditions of the sale of this land by the company was a provision requiring the planting and maintenance of an orchard by each settler. Much of this land reverted to Congress.

Moravian Lands.—Three tracts of four thousand acres each at Shoenbrun, Salem and Gnadenhutten, in what is now Tuscarawas County, were originally granted in 1787 by the Continental Congress to the Moravian Church at Bethlehem, Pa., in trust for the Christian Indians, who returned to the mission in 1798. Here the Indians remained until 1823, when, owing to the contaminating influence of the whites, they were removed to Canada and their lands sold to white settlers.

Zane's tracts.—Three tracts of 640 acres each, at the points where the road made by him in 1797 from Wheeling, W. Va., to Maysville, Ky., crossed the Muskingum, Hocking and Scioto Rivers, were granted to Ebenezer Zane by Congress in payment for cutting this road through the forest.

Dohrman's grant.—A tract of 23,040 acres in what is now Tuscarawas County was granted to Henry Dohrman, a wealthy merchant of Lisbon, Portugal, who rendered assistance to American ships during the Revolutionary War.

The French grant.—A tract of twenty-four thousand acres in the southeastern part of what is now Scioto County was granted by Congress to the French families who were originally settled at Gallipolis, Gallia County, by the Scioto Land Company cooperating with the Ohio Company, and who had lost their lands through defective title.

The salt sections.—One township in Jackson County and four thousand acres in Delaware County were reserved from sale by Congress on account of the salt licks (springs) they contained. Salt furnaces were maintained at these points under strict legislative control. After other sources of salt had been discovered, they were released and sold under act of Congress, in 1824. It is interesting to note that these salt springs were considered common property by the Indians, and no one tribe was allowed to possess them.

The college lands.—Two townships in the Ohio Company's Purchase and one township in the Symmes' Purchase were reserved in the companies' contracts for the purpose of establishing colleges within the respective purchases. The Ohio University at Athens and Miami University at Oxford are the beneficiaries of these grants.

Ministerial lands.—In both the Ohio Company's and the Symmes' Purchase, Section 29 of every township is reserved as the basis of a permanent fund for the support of a resident minister. This peculiar requirement is to be found in no other part of the State, and is an inheritance from a people accustomed to a regular pastor. Owing to these provisions each Christian church in the territory of either the Ohio Company's or the Symmes' Purchase receives each year from the county treasury a small allotment from the ministerial fund arising from the sale of these lands.

The Columbus-Sandusky turnpike lands.—Land was granted to the State by acts of Congress in 1827 and 1828 to aid in the construction of a turnpike from Columbus to Sandusky. It consisted of 49 sections, 31,360 acres, and was situated in the counties of Marion, Crawford and Seneca. This road, though maintained for many years as a toll road, was little more than a path through the forest. It became the main highway for wagoning farm produce, particularly wheat, to Milan and Sandusky, and facilitated the settlement of the counties through which it passed.

The canal lands.—Altogether nearly one million acres of land adjoining the various canal routes was granted by Congress to the State on the condition that canals be dug through such grants. These lands served the double purpose of aiding in the construction of internal improvements and in bringing other Congress lands on to the market that previously had been unsalable.

School lands.—By a series of acts of Congress, frequently called "The Compact," there was reserved to the people within the territory northwest of the Ohio River, for the support of public schools, one thirty-sixth of all the land within the territory. This grant was based on the consideration that Congress lands be not taxed until 5 years after their sale. Under this compact Section 16 of each township was designated as school land. These acts did not apply to the Connecticut Western Reserve nor to the Virginia Military Lands. Accordingly there was set aside, for the support of public schools in these divisions, an amount of United States Military Lands, equal to one thirty-sixth of all the land within the respective reserves. This tract was called the New Purchase.

Much of this school land was occupied by "squatters" with no title other than occupancy. From 1803 to 1820 these lands were a prolific source of legislation, some in favor and some adverse to the "squatters." A State school system was not adopted until 1825.

System of surveys.—Ohio was the first direct beneficiary of the Ordinance of 1785, whereby the Continental Congress provided for the survey of public lands into "hundreds" (townships) of 6 geographical miles square and these again into "lots" (sections) of 1 mile square. This ordinance, which was introduced into the Continental Congress in its original form by Thomas Jefferson, is one of the remarkable fruits of his genius. In the Connecticut Western Reserve and the United States Military Lands the townships are 5 miles square.

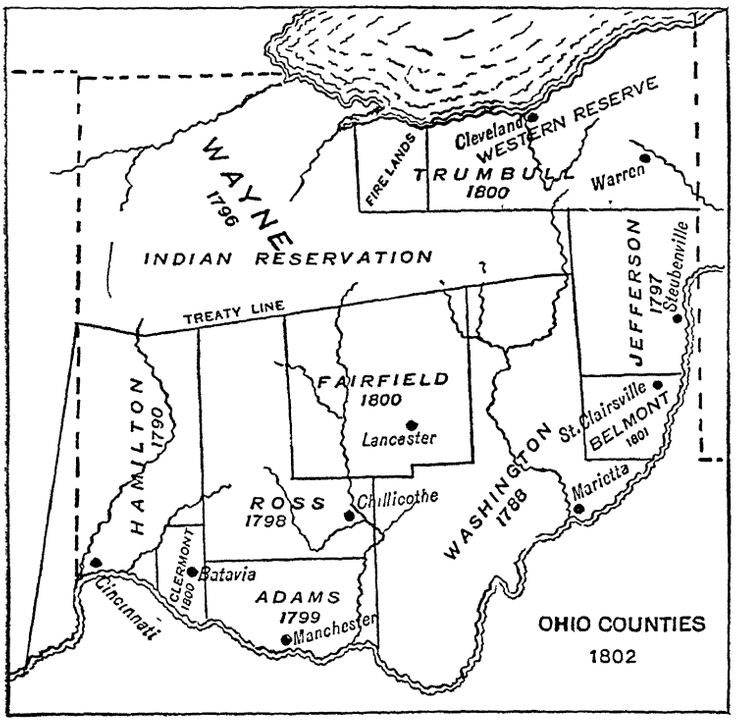
Number system for sections in Congress lands

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

Number system for sections in Seven Ranges, Ohio Company's Purchase, Symmes' Purchase and the Western Reserve

36	30	24	18	12	6
35	29	23	17	11	5
34	28	22	16	10	4
33	27	21	15	9	3
32	26	20	14	8	2
31	25	19	13	7	1

The townships are subdivided into sections 1 mile square (640 acres) as shown in the accompanying diagrams. Each section is again subdivided into four quarters, which are described as "northeast quarter section," and so forth. This system greatly simplified the description of lands in conveyances and did much to render titles certain and secure.



INFLUENCES AFFECTING POPULATION BEFORE 1832

Poverty.—The first settlers were, for the most part, extremely poor; many of them were soldiers of the Revolution who sought to hide their poverty in the wilderness. The condition of many of these old soldiers at the close of the Revolution was pitiable in the extreme. A bankrupt country had paid them in greatly depreciated currency and in promises. Many of the eastern farms were already unprofitable, and the more energetic people looked longingly to the West. Even before the Revolution the young men of the East were restless; and 8 years of war but added to the spirit of dissatisfaction which begat the pioneer. It has been said that "the West was settled by men willing to place a bet on themselves." This was particularly true of the settlement of Ohio, which constituted a part of our first great national migration westward—the first forward movement of a new nation. It developed a class of men who, having made one good bet, were ever ready to make another and were never thereafter content with civilization, but kept constantly in advance of it.

The wandering settlers.—The original settler was rarely a permanent one. He grew restless as soon as he heard the ring of another ax in the forest and looked dubiously at the smoke from a new cabin. The "Call of the Wild" was often too strong to be resisted, and he gathered his few belongings about him and moved on. He was followed by another class who enlarged the clearing, fenced the fields and made a few improvements, but who sold out and followed the pioneer west when the man with means appeared in search of a settled home. For 50 years after the landfall of the Mayflower at Marietta this movement of population was in progress in different parts of Ohio. It affected the Virginia Military District less than elsewhere, for there the land was taken in large tracts and a tenant system of farming was established at the outset. Many of the original pioneers of Ohio became the first settlers in Indiana and Illinois and later, after another migration, died as pioneers in Iowa, Kansas, Nebraska and other states farther west. Their immediate successors in Ohio not infrequently became the permanent settlers in Indiana and Illinois.

THE PATHS OF THE PIONEERS

As down Ohio's ever ebbing tide,
Oarless and sailless, silently they glide,
How still it seems, how light and yet how fair,
Was the lone land that met their gazes there.
No smiling villages or curling smoke
The busy haunts of men bespoke.
Nothing appears but Nature unperused:
One endless, soundless, woodland solitude.
(*The Backwoodsman*—James Kirk Paulding.)

Buffalo paths.—Before the pioneer could reach the banks of the Beautiful River and "drift" with his "oarless and sailless" boat now on its "ever ebbing tide," he must pass over the great mountain divide. The journey, now so insignificant as to be accomplished during a night, was then a matter of weeks and, moreover, was filled with much danger and difficulty. It was not, however, a pathless solitude. When the buffalo, the great American pathfinder, left the eastern seaboard, he followed three distinct paths to new salt licks and fresh pastures in the Ohio Valley:

(1) The northern path was through northern New York to the Lakes at Buffalo and became the route followed by many of the settlers to New Connecticut.

(2) The middle path reached from the Potomac River across the Alleghany Mountains to the Ohio River at Pittsburgh. This path was later the course of Braddock's Army and of the National Road

from Cumberland, Md., to Wheeling, W. Va., and over it the pioneers from eastern Pennsylvania, from the Shenandoah Valley in Virginia and from Maryland made their way to Ohio and the West.

(3) The southern path led from Virginia between the Blue Ridge and Alleghany Mountains through Cumberland Gap into Kentucky, and later became known as the Wilderness Road. It was the path of the Kentucky pioneers and later of the Georgia and Carolina migration into Ohio.

Pioneer settlements.—Each of these three roads was first plowed deep by the hoofs of the buffalo. Later, they became the trails of the Indians; the paths of the white man's army; the route followed by the pioneers and at last the roadbed of railways. The pioneers followed these trails through the wilderness and across the mountains, bringing with them their household goods, tools and sometimes their livestock. At the river, boats were often built and the journey continued by water down the Ohio and up the Muskingum, the Hocking, the Scioto, the Miami and their branches. All the early settlements were near water courses. From these they later followed the Indian trails into the interior. Single families sometimes came alone but more often several families migrated from the same neighborhood. Often they gave the name of their eastern home to their new home in the West: Portsmouth, Lynchburg, Manchester and Washington attest Virginian origin; New London, Salem, Amherst, Andover and Warren signify New England, while New Philadelphia, Dover, Newark, Lancaster and Lebanon suggest Pennsylvania and the central seaboard states.

These eastern farmers—for they were mostly farmers—found their new home a primeval forest only broken here and there from lake to river by a few little patches of prairie. The woods were full of wild beasts and the Indians were contesting the aggression of the white men. Not until after Wayne's Treaty in 1795 was it safe to be far from the settlements. The blockhouse and the garrison were necessary protection for the feeble settlements. Agriculture, even of the most meager sort, was hardly possible under conditions of this sort. The gun was carried to the field with the hoe, and frequently the toiler never returned from his labor.

Later settlements.—After the peace treaty, however, conditions changed. The Indians respected the treaty and no longer molested the white settlers. The Connecticut Land Company had extinguished the Indian title to the Western Reserve by "honorably" buying it for "two cows and a hundred gallons of whisky."[1] Settle-

[1]F. E. Hutchins. *The Western Reserve, Ohio Archaeological and Historical Society Publications*, VII, p. 267.

ments now sprang up everywhere east of the Cuyahoga and south of the Treaty Line. Many of the soldiers of Wayne's army settled in Ohio. Settlers from the South, the East and New England poured into Ohio in constantly increasing numbers. By 1800 there was sufficient population to insure the admission of this part of the Northwest Territory into the Federal Union as a state. This was accomplished in 1803. Statehood gave a new impulse to immigration, which continued until checked by the growing restlessness of the Indians, who as allies of the English, took the warpath again in 1812. Following the war there was considerable migration into Ohio. Many of the soldiers from Pennsylvania and Virginia, who had crossed Ohio with Hull on the march to Detroit, came with their friends to take up the beautiful lands they had seen. Others who floundered through the mud and endless swamps of northwestern Ohio carried back such tales of suffering from ague and fever that this region acquired a reputation from which it did not wholly recover until the swamps were drained after the Civil War.

The Indian titles to the lands west of the Cuyahoga River and north of the Treaty Line were extinguished by the Treaties of Fort Industry (1805) and St. Mary's (1812), and the whole State, except small reservations made to the Wyandots, Delawares and Senecas in Auglaize and Wyandot Counties, was open to settlement.

"Hard times."—Beginning about 1815, there was a period of "hard times" which greatly diminished immigration into Ohio. Progress of all kinds was at a standstill. Many dissatisfied people moved farther west; others who were discouraged moved back east; those who remained greatly bemoaned their unhappy state. There was some relief after work began on the canals in 1825. Atwater has given a good description of the gloom that overhung the State during this time:

> During the period of which we are about to treat (1815-1825), there was a stagnation of business of all sorts. To relieve the pressure, in the midst of it Congress reduced the price of their lands in the West, from two dollars to one dollar and twenty-five cents an acre. This reduction was extremely injurious to land owners, many of whom held large tracts, on which they had long paid taxes, until the taxes themselves amounted to more than the lands were worth. The productions of the lands, meat and bread, no longer found market near the place of their production. A want of good roads, either by land or by water, on which our home productions could be transported, added to our far inland situation, operated severely on industry of all sorts, and palsied every manly effort, either of body or of mind, in Ohio. This stagnation of business and this torpor of the body politic were increased and greatly aggravated by the failure of a great number of little country banks. These had sprung up like mushrooms, in a night, during the war, when every article, which the farmer could

spare, sold readily for cash at a high price. The eastern merchants, to whom we were greatly indebted, refused our western bank paper, except at a ruinous discount, in payment either of old debts or for goods. Our specie had been transported on pack horses over the Alleghanies. The vaults of our banks were emptied of their silver and gold, and all our banks either stopped payment, or ceased to do business. The farmer was discouraged from raising much more than what he really needed for his own immediate use; the trader feared to take bank paper, that might be of no value before he could use it; and his old customers could no longer purchase any goods except mere necessaries of life. The people living in the towns became idle, lazy and, of course, dissipated. Amidst this gloom, the national government brought suits in court on all the bonds due to them, for the internal duties on distilleries, etc., etc., and against the collectors of the revenue. United States lands had been sold to settlers on a credit, and these were forfeited for non-payment.

Universal ruin stared all in the face, and it seemed for awhile as if the people of the west would retrograde into a state of barbarism.....

Three-fourths of the state, all south of the summit which separates the waters of the Mississippi from those of the St. Lawrence, carried their produce to New Orleans for sale. This trade was very little better than no trade, only as it tended to keep men out of absolute idleness. The arks, or as they were called, "New Orleans boats," cost about two hundred dollars each, where they were built, and as they were of little value at New Orleans, and could not be used by their owners, only for descending the river, the entire cost of the boats was lost. The hands employed in this long, tedious and expensive voyage, provided they escaped death by the yellow fever, or by some robber, were compelled to return home by land through the Indian country. In the interior where these boats were built along the Ohio and its branches, after building the boats and loading them with flour, pork, whisky, cider, apples, fowls, etc., the freshet must come before they could depart on their perilous voyage. And it might happen, and did often happen, that all the streams in the state of Ohio were up at nearly the same time. The flood came, and with it departed such an amount of produce that the market was glutted. The best flour has been sold for three dollars a barrel, and pork for four or five dollars a barrel in New Orleans, which amounted to a total loss of the cargo.[1]

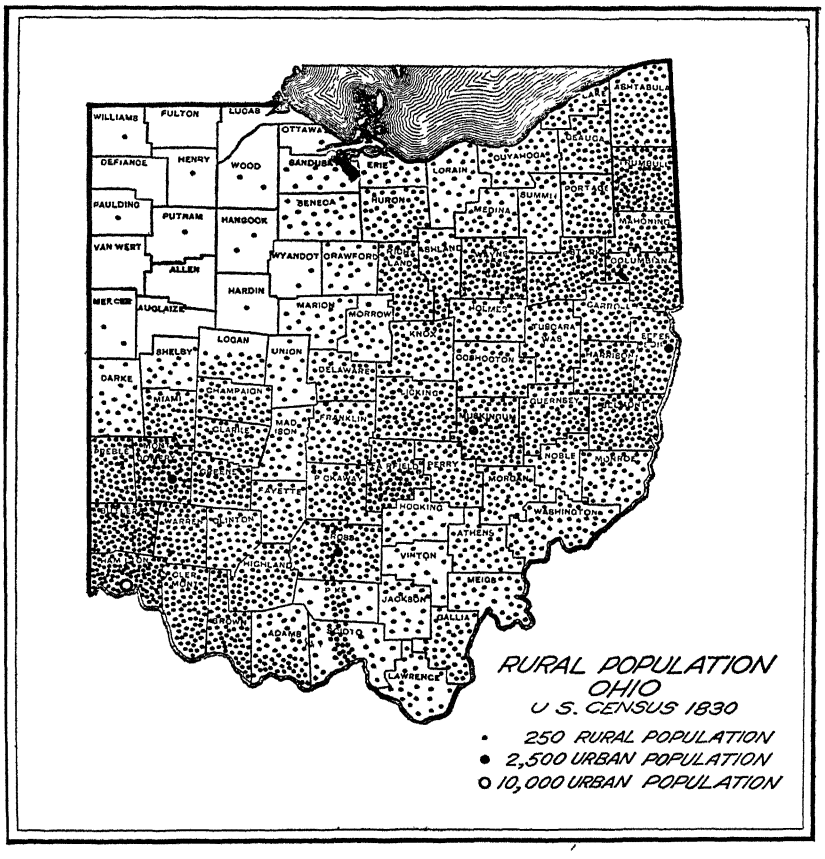
[1]*History of Ohio* (1838), pp. 245-247.

THE DEVELOPMENT OF POPULATION

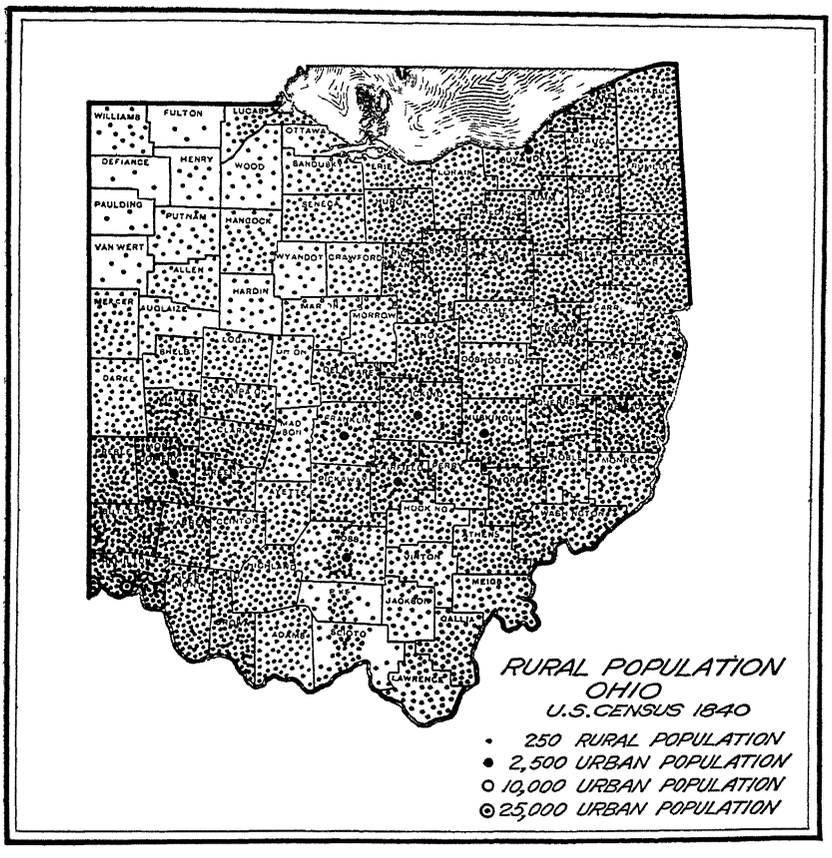
Rural population in 1800.—The maps on pages 37 to 42 show graphically the development of rural population in Ohio from 1800 to 1840. The Second Census (1800) gave to that part of the Northwest Territory which became Ohio, a population of 45,365; this had increased by 1802 to 60,000, or sufficient to entitle it to enter the Federal Union as a state. As shown by the accompanying map, there were three principal centers of population in 1800: one in the east along the Ohio River in what is now Jefferson and Belmont Counties; a second at the mouth of the Muskingum, and another at the mouth of the Miami. There were a few scattering settlements along the Ohio from Wheeling to Cincinnati and along the Scioto from its mouth as far north as Circleville. The entire State at the time of its admission contained about the same population as the present city of Canton or Springfield.

Rural population in 1810.—The Third Census showed that the State had made a most remarkable growth in population. There were at that time 230,760 inhabitants, an increase over the preceding census of 408.7 percent. The principal development had been in the Miami Valley, which contained 27.5 percent of the total population. Settlements had been pushed farther up the Scioto into the center of the State. The effect of Zane's Trace was quite discernible through the counties of Belmont, Guernsey, Muskingum, Fairfield, Perry, Pickaway, Ross and Highland. The population of the Western Reserve was very sparse, being only 3 to the square mile in comparison with 12 to the square mile in the Miami Valley. The people in the southeastern part of the State were remaining close to the river courses and the northwest was still uninhabited. The population was entirely rural. Cincinnati was the largest town, with a population of only 2,540.

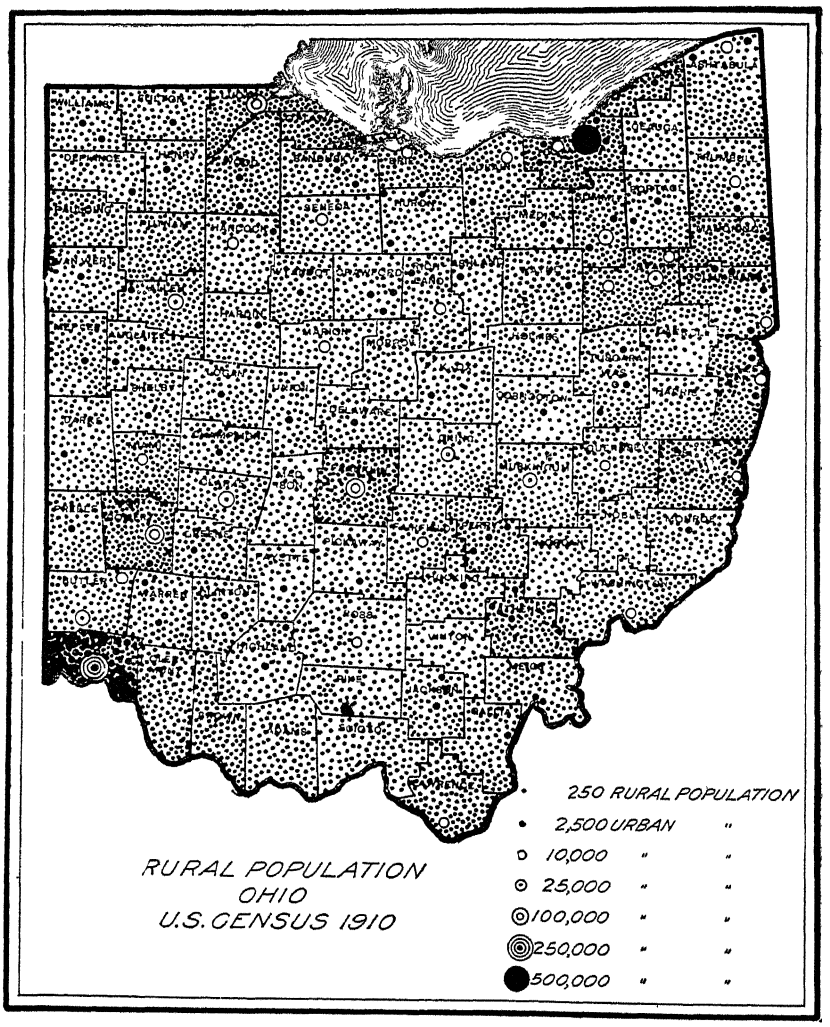
Rural population in 1820.—The Fourth Census gave the State a population of 581,434, an increase of 152 percent over 1810. The Western Reserve and the "backbone" counties of Columbiana, Stark, Wayne and Richland exhibited a remarkable development. The Reserve increased 254.68 percent and the "backbone" counties 308.02 percent. The Miami Valley was still most thickly populated, having 27 to the square mile, while the Reserve had increased from 3 to 10 to the square mile, the average of the State at this time being but 12. Settlements had pushed west of the Cuyahoga, and an occasional settler had built his cabin in the northwest. The entire State contained fewer people than are at present in the city of Cleveland, which was then a village of fewer than 500 inhabitants. Cincinnati, which had a population of 9,642, was still the only town in the State having more than 2,500 inhabitants.



Rural population in 1830.—In the next decade the population had increased to 937,903, being 61.3 percent increase over 1820. The Western Reserve and the "backbone" counties were still making the most rapid progress in population, which together show a gain of 97.43 percent, while the gain in the Miami Valley was 46.38 percent. The density of population in the different parts of the State at this time was as follows: "Backbone" counties 43 per square mile; Miami Valley 40 per square mile; southeastern Ohio 24 per square mile; Scioto Valley 24 per square mile; Western Reserve 21 per square mile, and the northwestern counties 2 per square mile. Towns were just beginning to grow in importance. Cincinnati, still the largest town in the State, had fewer than 25,000 inhabitants, while there were but five other towns that had a population of more than 2,500, as follows: Columbus 3,437; Zanesville 3,094; Dayton 2,965; Steubenville 2,937, and Chillicothe 2,846.



Rural population in 1840.—The Sixth Census was taken 8 years after the close of the Pioneer Period. The map shows the influence of the canals, National Road and other factors promoting settlement which had now covered the entire State except the "black-swamp" counties in the northwest. These influences will be discussed later. The State at this time had a population of 1,519,467, which was still almost completely rural. Cincinnati, the largest town in the State, had 46,388 population and the number of towns with a population of more than 2,500 were: Cleveland 6,071; Dayton 6,067; Columbus 6,048; Zanesville 4,766; Steubenville 4,247; Chillicothe 3,977; Lancaster 3,272, and Newark 2,705.



Rural population in 1910.—The map shows the distribution of rural population in 1910, and is introduced here for the purpose of comparison. The total population of the State had grown to 4,998,382, of which 2,101,978, or 44.1 percent, were rural, in comparison with 95 percent rural in 1840, and almost 100 percent in 1832 at the close of the Pioneer Period. Since 1840, the rural population has increased from 1,451,367 to 2,101,978, or 44.83 percent; while the urban population has increased from 88,100 to 2,665,143, or 2,925 percent. In 1840 there were but 11 towns with a population of more than 2,500, and in 1910 there were 139. In some counties the rural population began to decline as early as the decade from 1850 to 1860.

Character of the early population.—According to the Federal Census of 1840, 76 percent of all employed persons were engaged in agriculture. The population at the close of the Pioneer Period was almost exclusively American. A few Irish had come in as laborers on the canal, and there were small Welsh settlements in Licking, Delaware, Jackson and Hamilton Counties. The great German invasion had not yet begun to make itself felt in the northwestern counties. The character of the population at the close of the Pioneer Period was somewhat as follows: In the Western Reserve counties, the people were chiefly from New England, particularly from Connecticut and Massachusetts; but there was a large element from New York and, in the southern townships of Trumbull, Portage and Medina, not a few from Pennsylvania. Eastern Ohio, or what is now embraced in Jefferson, Columbiana, Carroll, Harrison and Belmont Counties, was peopled chiefly from western Pennsylvania and largely of Scotch-Irish stock with few Pennsylvania Germans and southern and eastern Quakers. In the "backbone" counties of Stark, Wayne and Richland were principally Pennsylvania German with a few French in Stark. Southeastern Ohio had drawn its people chiefly from Virginia and Kentucky, though there were New England and New York families in Washington, Athens and Meigs Counties. The Virginia Military Lands comprising the Scioto Valley had been peopled principally from Virginia and Maryland; with an intermixing of Pennsylvania population which had come in over Zane's Trace. In the Miami Valley, there were many people from New Jersey, New York and New England; but the immigrants from Pennsylvania and the South gave character to the population. Many of the Southerners were Scotch-Irish covenanters and Quakers from the Carolinas, Georgia and Tennessee, who came to Ohio because of the institution of slavery, to which they were opposed. The Pennsylvania-German population very nearly approached a foreign element, as they spoke a German dialect and maintained many racial peculiarities. They came to Ohio from Lancaster, York, Bucks and other eastern Pennsylvania counties and were usually called "Pennsylvania Dutch." Probably most of them were born in the United States, though a large number came from Germany, remaining awhile with friends in eastern Pennsylvania before coming to Ohio. Pennsylvania gave by far the largest number in the peopling of the State. In some counties, as has been indicated, the Pennsylvanians are predominent, but their influence is not confined to certain localities. It may safely be said that there is hardly a township in the State that has not a considerable number of its citizens who trace their ancestry to the Keystone State.

AGRICULTURE DURING THE PIONEER PERIOD

A rather primitive type of agriculture prevailed during the Pioneer Period. It required from 3 to 5 years for a farm to become even self-sustaining. The house was to be built, the land cleared of brush and the first crop planted, Indian-fashion, among the deadened trees, which later would be cut, rolled into log heaps and burned, and a new "deadening" begun. The pioneers of Ohio have been severely criticized for their destruction of the forest. The criticism is unjust. The forest was a hindrance and no agriculture was possible until it was removed. It sheltered wild beasts and lurking red foes. It was the enemy of the pioneer. He was forced to conquer it as he did. Beyond supplying material for his cabin, fences for his field and fuel for his fire, it was of little value. The little he needed for these purposes made a small impression indeed on the all-abounding forest. There was no home market for lumber, and shipping was profitable only in case of the more valuable sorts, such as cherry. The flatboats took some lumber of this class to New Orleans, and the boats themselves were broken up and sold on reaching that port. At Marietta some of the best timber was utilized in the ship-building business, which developed there about 1800. For the most part, however, the forest was not an asset and it was good farm management to get rid of it.

The river trade.—The river was the only outlet to the State's commerce and the "newcomers" furnished the only home market. There was little incentive to produce beyond what was needed for home consumption. The market at New Orleans was uncertain and often glutted. After the long river trip, the shipper frequently received a bill for freight and storage, the merchandise not bringing enough to pay transportation charges. After reaching New Orleans and disposing of the cargo and boat, there was a long and dangerous trip home afoot.

The *New Orleans*, Fulton and Livingston's first steamboat on western waters, was launched in 1811 at Pittsburgh. It reached New Orleans January 9, 1812, in 259 running hours, an average of 8 miles an hour. Not until 1817, however, did a steamboat ascend the river, and steam navigation was not an important factor until 1825. The boats were small and burned wood exclusively for fuel, and the freight charges were necessarily high. Only the most concentrated freight was profitable. Wheat was converted into flour, and corn and rye into whisky. The Yankee farmers at Belpre sent small shipments of cheese, and farmers in Marietta and in the Miami Valley, some dried fruits and cider. Only the farms immediately

accessible to the rivers and streams found it profitable to supply even these meager exports. From the interior settlements there were few roads over which the farmer could take his crops to market. The markets for the northern settlements were New York, Detroit, Montreal and Quebec.

The financial situation.—Of money there was almost none. Barter, very little improved over the Indian trader's system, was universal. No American dollars were coined from 1806 to 1836, and there was no subsidiary coinage. The only metallic money was Spanish dollars, which were brought back from New Orleans in exchange for exports, and which were converted into "sharp" money by the use of the cold-chisel, being divided into six and sometimes eight pieces or more.

"Skin" money was a frequent medium of exchange; the "muskrat skin," worth 25 cents, being the unit of value. One and a half muskrat skins were equal to a coonskin; four muskrat skins to a buckskin; twelve muskrat skins to a bearskin, and so forth.

Whisky, which was an article in everyday use, was a common form of exchange. Of "wildcat" state banks there were a plenty, but their currency was subject not only to violent fluctuations but also to much inequality of value in the issues of the various banks. The financial troubles which afflicted the whole country from 1810 to 1832, and the great panic of 1819, further stayed the tide of agricultural development. Farmers were unable to meet the payments on their farms. Twenty million dollars in debts was due the United States Land Office in 1820 for land northwest of the Ohio River. After years of toil and saving, with one or two installments of the purchase price paid, and some improvements made, the farmers were in a fair way to lose all. It is estimated that at this period more than one-half the farmers north of the Ohio River were hopelessly in debt. So bad did the situation become that the Government granted permission to relinquish such land as the farmers could not pay for and to apply the whole amount paid toward such land as was retained. At the same time, the purchase price was reduced from $2 to $1.25 an acre. These acts saved the farmers of the State from complete bankruptcy.

It was under these discouraging conditions that Ohio agriculture had its beginning. For 40 years it was a life-and-death struggle with nature. The pioneer was of a strong, virile race, and even with the difficulties encountered he did his work well. He came to Ohio poor in purse, but he represented the best blood and the most progressive, energetic spirit of the East and South. After

1830 the conditions of agriculture was greatly improved. Atwater in 1838 enumerates the following articles as among the State's exports: wheat, maize or Indian corn, hemp, flour, bran, salt pork, beef, bacon, apples, hay, whisky, millstones, grindstones, earthenware, glass, cordage, cattle, horses, hogs, sheep, wool, boards, shingles, coal, woolen and cotton cloths, jeans, gunpowder, printing types, cabinetware, beer, fowls, butter, cheese, planks, steamboats, frames for houses, bricks, hewn stone, boots, shoes, books, paper, rags, thread, twine, tobacco of all sorts, plows, shovels, spades, potatoes, grass seed, ale, porter, domestic maple sugar, molasses, axes, hoes, saddles, bridles, bristles, tallow, staves, printing presses, feathers, hops, cider, iron in hollow ware, and bars and pigs of iron. Of these articles horses, cattle, hogs, sheep, beef, lard, bacon, wheat, flour, Indian corn and whisky were the most important.

The taxation system.—By the first law affecting taxation adopted by the Territorial Assembly, August 1, 1792, unimproved and unsettled land was not taxed. The rate on improved land was not to exceed 75 cents on a $200 valuation. A general taxation law was adopted May 1, 1798, following the Kentucky system. Land was divided into three classes and taxed at 30, 20 and 10 cents per hundred acres. This was strictly a land tax, no taxes being levied on personal property of any sort. The rate of taxation was changed in 1799, first-class land being taxed at 85 cents, second-class land at 60 cents and third-class land at 25 cents per hundred acres. County levies were authorized on personal property as follows: Horses, mares, mules and asses were taxed at 50 cents each; neat cattle, at 12½ cents each; bond servants at $1 each and bachelors not having $200 in property, 50 cents to $2 each. The first poll tax was levied in 1800. All able-bodied free males above 21 years of age were taxed 50 cents each and the bachelor tax was continued. The territorial levies for the year were fixed at 55 cents, 35 cents and 17 cents per hundred acres for the different classes of land. In 1802, the tax rate was fixed at 60, 40 and 20 cents per hundred acres. The total expenditures under the Northwest Territory amounted to $107,104.13. The governor drew an annual salary of $2,000; the secretary of the Territory, $750; and the three judges, $800 each. The items of chief importance other than salaries were for public roads, $1,882, and exploring copper mines, $1,500.

The Constitution of 1802 forbade the Legislature to levy a poll tax for State or county purposes and continued the single land tax for State purposes. The rate per hundred acres was at first fixed at 90 cents for first-quality land, 65 cents for second-quality land and 40 cents for third-quality land. The first year under the consti-

tution the total State tax amounted to $22,331.06. The rate in 1803 fixed the county levies as follows: neat cattle more than 3 years old, 12½ cents; horses or mares 3 years old, 30 cents each. This law was amended in 1805, decreasing the tax on neat cattle to 10 cents per head. The single land tax remained in force until 1825, when the Legislature passed a general property tax and changed to the ad valorem system. Under this system all property, real and personal, was to be taxed at its true value in money. Credits did not become taxable until 1831. Under the new ad valorem system the first rate was made at 1½ mills on the dollar valuation. Under this system, in 1826 there was raised $105,816 and a total for all purposes, State and county, of $392,783. At the close of the Pioneer Period (1832) the total value of taxable property in the State was $74,243,032, and in 1912 it was $2,145,393,637, while the amount raised by taxation had increased to $76,974,096.26.

TABLE I.—GRAND DUPLICATE OF OHIO FROM 1803 TO 1832.[1]

Years	First-grade land	Second-grade land	Third-grade land	Total	Rate of taxation per 100 acres			Total taxes
					First-grade	Second grade	Third grade	
	Acres	*Acres*	*Acres*	*Acres*				
1803	101,709	2,326,226	3,641,694	7,069,629	$0.90	$0.65	$0.40	$ 22,331.06
1804	.....	.....	.....	.....	.90	.65	.40	22,331.04
1805	.....	.....	.....	7,252,856	.90	.65	.40	43,510.95
1806	.....	.....	.....	7,917,590	.90	.65	.40	48,260.48
1807	.....	.....	.....	7,886,840	.90	.65	.40	43,632.79
1808	147,093	5,080,131	5,025,183	10,479,029	1.00	.75	.50	67,501.60
1809	141,805	3,971,825	6,810,403	9,924,033	1.00	.75	.50	63,991.87
1810	129,741	4,177,950	5,675,418	9,933,099	1.25	1.00	.65	85,964.39
1811	234,335	6,456,113	5,444,329	12,034,777	1.25	1.00	.65	170,546.74
1812	185,775	5,585,367	6,598,890	11,370,032	1.25	1.00	.65	155,137.07
1813	179,666	4,858,750	5,895,907	10,934,323	1.25	1.00	.65	108,761.24
1814	180,370	4,919,968	5,995,540	11,095,878	2.00	1.50	1.00	165,196.48
1815	174,819	4,856,997	6,058,398	11,090,214	3.60	2.68	1.78	259,486.19
1816	173,741	4,366,846	6,098,517	10,639,104	3.75	3.00	2.00	229,897.98
1817	165,492	5,027,390	6,138,738	11,331,620	3.00	2.25	1.50	231,811.68
1818	205,344	5,174,726	6,334,398	11,714,468	2.00	1.50	1.00	169,185.43
1819	126,138	5,251,270	7,261,632	12,639,040	1.50	1.00	.50	179,475.62
1820	255,082	7,304,633	5,759,323	13,319,043	1.50	1.00	.50	205,346.95
1821	241,914	7,734,974	6,402,336	14,380,224	1.00	.75	.50	171,648.68
1822	226,084	6,870,921	6,585,449	13,682,454	1.50	1.12½	.75	188,647.53
1823	234,000	6,859,439	7,016,312	14,110,381	1.50	1.12½	.75	194,289.95
1824	222,852	6,822,230	7,675,566	14,720,648	1.25	.87½	.56	170,761.20
1825	178,998	5,672,277	7,173,798	13,025,073	1.50	1.12½	.75	200,405.25

Years	Value of Realty	Value of personalty	Total value of taxable property	State tax	Total
1826	$15,946,840	$11,035,820	$57,982,640	$105,816.00	$392,783.00
1827	47,206,386	12,375,336	69,591,722	188,830.00	472,094.00
1828	50,116,513	12,168,841	62,285,054	187,906.00	498,481.00
1829	49,511,733	16,788,170	66,299,903	174,412.00	441,191.00
1830	50,086,250	14,589,335	64,675,578	232,472.00	598,595.00
1831	50 627,110	15,793,666	66,420,776	240,991.00	615,651.00
1832	55,013,412	19,229,620	74,243,032	264,954.00	685,909.00
1912	4,335,665,521	2,145,393,637	6,481,059,158	2,922,577.17	76,974,096.29

[1]Reports of the state auditor.

PIONEER CROPS AND METHODS

CORN

Varieties and yields.—Corn was the leading crop of the pioneer as of the Indian. He followed the Indian method, both in planting and in cultivation. A heavy iron hoe was often his only cultivator. With this he practiced deep cultivation, "hilling up" the corn, though he hardly followed it to the Indian extreme, which was to draw the earth about the hills to a depth of more than a foot. "Squaw" was the common type grown. Hackberry and Gourdseed were probably the earliest improved varieties. The latter variety was said to produce 24 to 30 rows to the cob and 1½ bushel of ears would produce a bushel of shelled corn. It also excelled all other varieties in sweetness and produced 2 quarts more whisky to the bushel than the New York corn. In favorable seasons, in the Miami and Scioto Valleys, it sometimes produced 90 bushels per acre; 50 bushels was a common yield. Flint corn was grown extensively over the whole State, but particularly in the Connecticut Western Reserve. The seed in some cases was brought from the East, but was often secured from the Indians. For the most part the fodder was not utilized, but left standing in the field, the ears being jerked. The practice of cutting the corn and shocking it was first introduced in the Virginia Military Lands, whither the practice had been brought from Virginia. In time this came to be the usual practice throughout the whole State, but not until after the close of the period now under consideration. In the Connecticut Reserve pumpkins were almost universally planted in the corn, and it was a frequent practice elsewhere, wherever there was New England population. Cornbread was almost the universal diet. As soon as the corn was sufficiently matured some of it was gathered, dried and grated. There were but few mills and journeys of 20 to 40 miles on horseback with a sack of corn for grinding were common.

A pioneer corn improver.—Christopher Leaming, who lived in the hills near Cincinnati, was one of the pioneers in corn improvement. His son, J. S. Leaming, sr., later became the originator of the celebrated corn that bears his name. In his account of corn culture in 1826, Mr. Leaming says:

> The practice was then among large landholders that then owned these bottom lands to rent out in parcels or lots, running from 5 to 15 acres, the lots being divided by what was called turning rows, to parties who had no corn land or who had hill land that would not produce corn like the bottoms, the tenant giving one-third of the crop put in the crib. The bottoms that we had lots rented in were called the Langdon bottoms, just north of the Turkey bottoms

and west of the Turpin bottoms. (This was in 1826.) The plow then in use was what was called the Bull plow, with wooden mold and iron and steel points. In breaking up the ground it simply broke the ground and edged it up. In dry seasons at breaking time I have often seen fields after they had been broken up that looked like fields of boulders. The common practice was to go right on and furrow out, without any other preparation by harrowing, rolling or dragging, and plant the other way. Then it took two boys or girls, according to the tenant's supply of children, to drop the corn, and from four to five sturdy fellows with "nigger hoes" to rake among the clods and cover the seed, taking six or seven hands in all to keep up with the plow. Then one harrowing after the corn came up and two plowings with the wooden moldboard plows was all the attention the crop received till gathering time. Sometimes a boy would follow the harrow to rake off the clods with a hoe, which nine-tenths of the time would be on his shoulder and two-thirds of the remainder he would be occupied at throwing clods at the blackbirds. At gathering time the burs and Spanish needles, careless weeds and pigweeds, would average from 4 to 8 feet high. A brush would be provided with a singletree, an old horse hitched, a boy astride, to pass up and down between the rows to clear the track, knock off the burs and break the wild sweet potato, pea, and man-of-the-earth vines, so that the huskers could get through, find and husk the corn. About 35 to 40 bushels per acre was a usual crop on these rich lands, when with proper culture 80 to 100 bushels could have been easily produced.

When my father, two brothers and myself went to the bottoms to raise corn, in the year 1827, it was common among corn raisers to say of others' fields that they could take hold of the wild cucumber or peavines at one corner of a 5-acre lot and shake all the corn in it. My father took long strides ahead in corn culture; plowed 2 or 3 inches deeper, cultivated well, cut out all the weeds at laying-by time, which, with him, was when the corn was in full silk, consequently did not have to call in the aid of horse and brush at gathering time, and as a result raised double the amount per acre, and with the improved seed he introduced and planted in the season of 1827, sold off a 10-acre lot his two-thirds, being 6⅔ acres, 693 bushels, averaging 104 bushels per acre. It went all over the bottoms and astonished everyone along the Miami, and was the talk and praise of all the landowners; caused envy with many of the tenants, but resulted in great good in stimulating others to raise as much as Leaming had.[1]

Distilleries.—The Census of 1820 reports 552 distilleries in the State, consuming nearly 600,000 bushels of grain (corn, rye, barley and wheat). Three-fifths of them were in the Scioto and Miami Valleys, the leading corn-producing section of the State. In 1825 there were on the Miami above Franklin more than 100 distilleries making annually more than 200 barrels of whisky each. Hamilton County alone had 78, Montgomery 53 and Ross 55. They were generously distributed throughout the State, Athens having 24, Washington 29, Jefferson 54, Licking 15 and the Western Reserve 46. Many of these stills were very small, the 2 in Lawrence County using but 200 bushels of grain and the 24 in Athens County only

[1]Lloyd, *J. S. Leaming and His Corn.*

10,015 bushels. Much of the output of these small stills was manufactured for home consumption, the farmer taking a load of corn to the still and returning home with one or more barrels of whisky for the use of the family. In the Western Reserve it was said, "The land would produce nothing but corn, but, as there was no market for the corn, they made it into whisky; and, as they could not sell the whisky, they drank it."

The Census of 1820 reports the condition of the distillery industry in Ohio as generally depressed. "The distilling of spirits from grain has become so extensive and general throughout the country that the business is scarcely worth attention."

Culture of the crop.—There was but little and often no preparation of the furrows before planting the corn. With a soil full of the accumulated humus of ages, careful preparation of a seed bed was not so important a requirement as it later became. The field for corn was "laid out" with a single shovel plow so that the "marks" were about 4 feet apart each way. The corn was dropped by hand, four grains to a hill at the intersection of the furrows. The whole family took part in the corn planting, and for weeks thereafter the fields had to be carefully guarded to drive away or to kill the squirrels, crows and blackbirds. The single-shovel plow was the most common horse hoe, but in many fields there was no cultivation other than that given by hand; indeed, there are a number of pioneer stories of good crops being made with no cultivation whatever. Some of these stories are not impossible. The pioneer farmer was a believer in deep tillage and following the Indian method he "hilled it up" when he "laid it by."

The corn was not usually cut, but was harvested after the custom of the Indians by jerking the ripened ears from the standing stalks. Later the ears would be husked in the barn at a frolic called a "husking," which was participated in by young and old alike, and which was usually followed by a barn dance. The festivities attending the corn harvest were probably an adaptation of the "corn feast," the chief festival of the Indians. In the Scioto Valley, where tenant farming prevailed to a great extent, the corn was partly cut, the practice being for the tenant to cut the landlord's share, and to leave his own standing in alternate rows in the field. He husked this from the stalk and sold it, usually to the landlord. The practice of feeding shock corn to cattle was common throughout the Scioto Valley, the shocks being drawn to the feedlot as needed. In the latter part of the period, ear and shelled corn were shipped south on the flatboats and steamboats.

WHEAT

Early culture.—Wheat was introduced at Marietta with the first settlement and the first crop was harvested the following year, 1789. It was sown by Truman Guthrie, who brought the seed with him from one of the frontier counties of Pennsylvania. The field where this first Ohio wheat was grown was in the neighborhood of the present courthouse in Marietta.[1] It was grown generally throughout the Pioneer Period, but was neither so popular a crop as corn nor so well adapted to the new land. It was not usually grown until several crops of rye, buckwheat or corn had been taken from the land. The wheat was sown broadcast among the stumps and harrowed in with a brush harrow. A bushel to a bushel and a quarter of seed to the acre was sufficient seeding, as the wheat stooled profusely on the new land. It often lodged badly and failed to fill properly and was afflicted with a peculiar fungous disease termed by the farmers "sick" wheat. This name was given it because it rendered those sick who ate of the bread prepared from it. The disease was characterized by a pink spot on the berry and was most prevalent in the wet season. This diseased grain was usually made into whisky. The wheat was cut with a sickle until about 1815 when the cradle came into more general use. Flint, an English traveler, who visited Ohio in 1818, considered this tool unique and remarks, in his "Tour of America," that "if our people (the English) could learn the art of using it, it would prove a most valuable substitute for the sickle or scythe."

In the Miami Valley, the land intended for wheat was usually plowed in the spring and replowed in the fall. This system of summer fallowing was an inheritance from England, where for a long time it was the basis of the whole agricultural system. The practice did not fall into disuse in Ohio until about the time of the Civil War.

Varieties.—Of early varieties of wheat we have but little authentic information. Red-chaff Bearded (Old Red Chaff) was probably among the first and was quite a favorite before 1825. It was said to give large yields of a "short, plump berry." It was introduced by John Dent into Muskingum County in 1808.[2] At first millers called it ryelike wheat and discriminated against it in price. Red Blue Stem was also an early favorite. Mediterranean was introduced in Mahoning Counuty by J. Rollen as early as 1827, under the name of Black Sea Wheat. It at first suffered the same dis-

[1]Ohio Agricultural Report (1857), p. 49; and S. P. Hildreth, *Pioneer Settlers of Ohio* (1852).
[2]Ohio Agr. Rpt. (1857), p. 739.

crimination at the hands of the millers as the Red Chaff, but later became the most popular, universally grown and highly esteemed wheat in Ohio.

Harvesting.—Wheat harvest called for a large amount of extra help. Many farmers exchanged labor at this time and made of the harvest a sort of frolic. Every community had its champion cradler and champion binder, and the harvest brought forth many strenuous races. Where hired labor was employed, a bushel of wheat was the usual equivalent for the day's work. The cradler was followed by a raker, generally a boy or a girl, and a binder. Often a man would "take up" after a cradler himself.

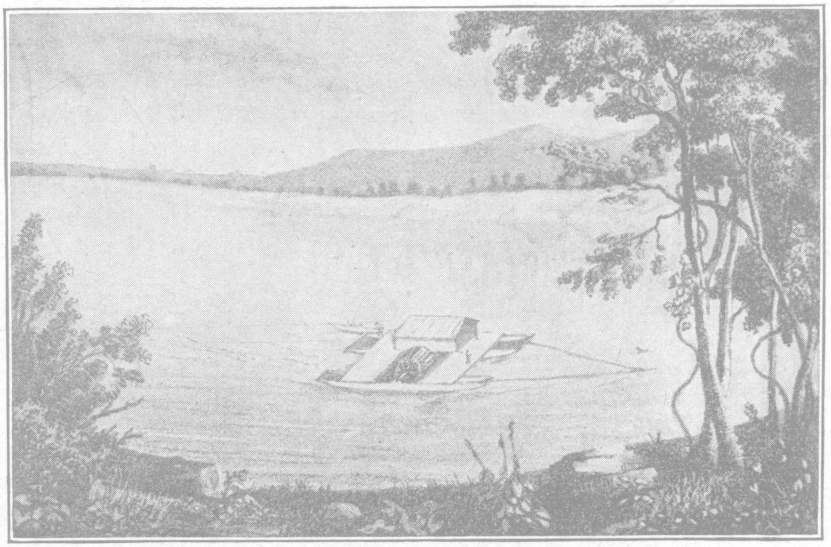
A good cradler would cut 3 to 4 acres of wheat or oats a day if the grain stood up well. With a sickle a man could cut about 1 acre. He would reap across the field a swath about 3 to 4 feet wide and lay down the grain in grips or big handfuls, then hang the sickle across his shoulder and bind back.

The threshing afforded work for the winter months and was accomplished both with flails and by tramping out the grain with horses and cattle. The treading floors were from 60 to 100 feet in diameter with a path 10 to 12 feet wide within the circumference upon which the sheaves were laid; the floor was sometimes fenced on both sides of the path. Four platoons of horses, kept equidistant from each other, were sent around the path at a slow trot. Each platoon of horses was in charge of a rider and other laborers kept the sheaves turned. The threshing floors were sometimes made of boards and moved from place to place, but were often simply of the hard clay. In this manner as much as 300 bushels could be threshed in a day. It would require five men with flails for 10 days to accomplish as much. An ordinary laborer would thresh and clean in a day 6 bushels of wheat, 18 bushels of oats, 15 bushels of barley, 8 bushels of rye or 20 bushels of buckwheat.

There are no authentic data with regard to the yield of wheat, though at a later period yields of 50 and 60 bushels to the acre are reported. Such yields were, of course, exceptional.

Milling.—Wheat bread was not a common article of diet among the pioneers, though both wheat and flour were articles of commerce. The first mill in Ohio was erected in 1789 at Wolf Creek, near its junction with the Muskingum, by Major Haffield White. A floating mill operated by the current of the river was established at the mouth of the Hocking in 1791 by Captain Jonathan Devoll. This unique mill is described by Hildreth as follows: "It was built on two boats: one a large pirogue, formed out of an immense hollow

sycamore tree; the other a large flatboat, made of planks 50 feet long and 10 inches wide. This sustained the millstones, gearing, hopper, etc., while the other boat supported the outer end of the water-wheel shaft. The boats were connected by stout timbers, to keep them steady against the wind and current of the river, planked over so as to make a floor between the bow and stern of each. The open space was 10 feet square, in which the waterwheel worked, which was similar in structure to those of a steamboat. The main boat was secured by a chain cable attached to a rock anchor, the other by a grapevine. The mill was stationed about 30 yards from



The first floating mill on the Ohio River, 1791

the shore of the island, nearly half a mile above the castle, as seen in annexed plate. In a favorable state of the river, it could grind 40 bushels in 24 hours."[1]

The early mills were crude affairs and their output was necessarily small. Before the end of the period, however, mills were in operation along the Muskingum, Scioto and Miami Rivers and throughout the Western Reserve; flour was being shipped both by lake and by river. Before the completion of the Erie Canal, all the flour from lake ports was shipped to the frontier settlements in Michigan. In 1822 the price of flour at Cleveland was $2.50 a barrel and wheat 37 cents a bushel. The Census of 1820 reports mills in 33 of the 63 counties. They ground annually almost two million

[1]*Pioneer Settlers of Ohio* (1852), p. 252.

barrels of flour, of which more than half was manufactured in the Miami Valley, Montgomery County alone producing 329,422 barrels. The price of flour at this time was from $2.50 to $4 a barrel. The price was dependent on the nearness to market.

RYE

Rye was relatively more important in pioneer agriculture than at present. For a time it was more popular than wheat because of the greater certainty of the crop, it being much better adapted to the new land. Some people had a partiality for rye bread, but the chief reason for its popularity was the fact that it could be made into a better quality of whisky. The price of rye varied from 15 to 50 cents a bushel, being usually a few cents lower than wheat.

BUCKWHEAT

Buckwheat was a common crop. It was grown particularly on new land, as it was thought that this crop would "tame" the soil so that wheat could be grown. Only a small amount was grown on any farm and this principally for home consumption. It was more common in the counties of the Connecticut Western Reserve than elsewhere.

BARLEY

Barley was raised but little in the early part of the Pioneer Period but toward its close began to be produced for the developing brewing trade in southwestern Ohio.

FLAX

Flax was grown almost as generally as corn. It was produced at first altogether for use in the home manufacture of clothing and household linen. Mixed with wool it became the "linsey-woolsey" of our grandmothers. It was pulled, retted, broken and then turned over to the women of the household for further manipulation. Before 1820 a few oil mills were established for the manufacture of linseed oil. The Census of 1820 reports such mills in Clark, Clermont, Columbiana, Green, Hamilton, Harrison, Jefferson, Montgomery, Muskingum, Portage, Ross, Stark, Trumbull, Warren and Butler Counties, consuming in all 25,220 bushels of seed for which they paid $21,986, an average of 87 cents a bushel. The oil sold at from $1 to $1.25 a gallon. Castor beans (*Palma christi*) were also grown in a small way for some of these mills. The mills were small establishments operated by horse power. Atwater says that in 1838 flax was going out of use, as people preferred the cotton cloth to their own home manufactures.

HEMP

Hemp, though not so common a crop as flax, was raised to a considerable extent. In the vicinity of Marietta, where there was a flourishing ship-building industry, this crop was extensively produced. Two ropewalks were in operation there for a number of years; another was in operation at Springfield in 1808. Harris, in his "Journal of a Tour" (1805), in speaking of the Muskingum country says: "No country can produce the article of hemp in greater abundance or at a more moderate price. Even in this early stage of agriculture in a new region, the price has not commonly exceeded $100 per ton." Hemp was grown also in the bottoms of the Scioto and the Miami but not so extensively. Hildreth thinks its culture was peculiar to the Irish settlers. The extremely large amount of hand labor involved rendered its production unprofitable in competition with slave labor in Kentucky; and, as transportation facilities developed, its production in Ohio ceased.

OATS

Oats were an important crop and highly esteemed as a feed for horses, particularly by the Pennsylvania farmers, but there was almost no sale for them except to "newcomers." Prices varied greatly, but from 10 to 20 cents a bushel was the usual local price.

HAY

The hay crop of the pioneers was principally timothy and wild hay (prairie hay), which was cut in great abundance in the territory now comprising Green, Champaign, Madison, Pickaway and other counties in the State. Timothy was grown to a considerable extent in the Connecticut Reserve. The grass was cut with the scythe, made into cocks with wooden forks and dragged to the feedlot by a rope or grapevine. It was usually stacked, shelter not being considered necessary. Barns were built more for the protection of the livestock than for the storage of feed. Clover was not highly esteemed and was but little grown until toward the close of the Pioneer Period. The "newcomers" afforded a market for considerable hay at from $4 to $6 a ton.

COTTON AND RICE

It seems strange to consider these as Ohio productions, yet both were grown successfully for a number of years. Cotton is reported by Colonel John May, in his "Journey to the Ohio Country" (1789), to be "growing in perfection at Marietta." A few years later Jonathan Devoll at Marietta constructed a gin for separating the seed

from the lint and some cloth was made from home-grown cotton. It is noted as one of the products of the country in the advertisement circulated in Paris, France, in the interests of the Scioto Company. It continued to be raised in Lawrence County as late as 1840. The variety was known as the Green Seed, such as was grown in Kentucky.[1] Its production was not at any time of any commercial importance and was simply one of the experiments made by the pioneers. While there are no records of cotton yields in Ohio, the high price of cotton cloth and the impracticability of shipping raw cotton to Ohio may have made its production profitable even under rather adverse conditions.

Rice was grown for a number of years at Marietta and at the settlements at the mouth of the Scioto River.

FRUIT

Pioneer horticulturists.—The planting of fruit trees was among the first improvements made by the pioneers. It is thought that peach trees grew at Fort Harmar before the settlement at Marietta. When Israel Putnam visited the colony in 1789 he grafted a few apple trees from scions brought from Massachusetts. In the following year the Dana orchard on the Muskingum was planted. These trees were seedlings. Colonel May in his journal reports 15,000 fruit trees growing at that time. A wagonload of scions was brought over the mountains in 1796. In all there were 23 varieties introduced at this time; namely, the Putnam Sweet, Seek-no-Further, Early Chandler, Late Chandler, Gilliflower, Pound Royal, Natural, Rhode Island Greening, Yellow Greening, Golden Pippin, Long Island Pippin, Tolman Sweet, Streaked Sweeting, Honey Greening, Kent Pippin, Cooper, Streaked Gilliflower, Black Gilliflower, Prolific Beauty, Queening, English Pearmain, Green Pippin and Spitzenburg.

Putnam's nursery was established on the Muskingum bottoms in 1818. In this nursery were all the foregoing varieties as well as about 20 other New England varieties. Trees were sent to all the river counties from this nursery, and its influence on the fruit of the State was exceedingly great.

Micheaux, in his "Travels" (1805), speaks of the peach as being extensively cultivated in Ohio.

Large apple orchards were set out in Stark County in 1806 and 1807 with varieties from Pennsylvania; viz, the Blair, Newtown Pippin, Romanite, Roman Stem, Bellflower, French Pippin and

[1]Atwater, *History of Ohio* (1838), p 89.

others. A cargo of apple trees was brought to Sandusky from Canada in 1812 by John Hoak and sold to settlers throughout northern Ohio.

Ernst and Longworth were the pioneer horticulturists in southwestern Ohio. A. H. Ernst established an experimental orchard and set out nearly 600 varieties of apples and 700 of pears, with the idea of establishing what would be the best varieties to plant in that locality.[1] Nicholas Longworth began his valuable work as a horticulturist as early as 1808. His first vineyard was planted about 1818. The Schuylkill grape was his first leading variety. His attention was soon directed to the Catawba, and he at once began experimenting with it, and it succeeded beyond anything he had tried as a wine grape. Longworth continued experimenting with grapes, trying out all the European varieties, but found none comparable to the Catawba. He planted extensive vineyards in Hamilton and Clermont Counties, which he operated on a share-tenant basis. The tenant agreed to set out and care for a certain acreage of grapes each year and to deliver one-half of the grapes at Longworth's wine cellar for the rent of the land. Many farmers began growing grapes independently of Longworth, and vineyards dotted the hillsides of the southwestern counties. It was not until after 1830 that the grape industry became of great importance in this section. From then until 1850, when the rot appeared, grape culture was a leading agricultural feature in the locality mentioned.

Longworth later devoted much time to the strawberry and was the first to publish the difference between the pistillate and staminate varieties, though he was probably not the discoverer of this sex distinction. Longworth learned of it from the son of a gardner in Cincinnati, who was carefully guarding the secret; but, when Longworth found it out, he published the fact to the world. The importance of this discovery can hardly be recognized. Strawberries, then a rare and expensive luxury, became a common garden fruit.

J. P. and Jared Kirtland established a nursery in 1824 at Poland in what is now Mahoning County. Scions from the best varieties were obtained from New York, New Jersey and New England. Trees from this nursery were widely disseminated throughout the Connecticut Western Reserve and in the counties of Columbiana, Stark and those southward. The Kirtlands gave much attention to hybridization and established a number of varieties of cherries and pears.

[1]Ohio Agr. Rpt. (1859), p. 464.

Ebenezer Zane established a nursery at Bridgeport, opposite Wheeling, W. Va., and disseminated valuable varieties throughout the central counties and along the path of his celebrated "trace." Among the varieties of apples originated in this nursery are the Bentley Sweet, the Ohio Red Streak, the Culp and the Belmont. The Askew and Golden Egg plum are also productions of this nursery. Before the close of the Pioneer Period there were thus established at least four important centers of horticultural interest; Poland in northeastern Ohio, Bridgeport and Marietta in the southeast, and Cincinnati in the southwest.

Johnny Appleseed.—No account of Ohio horticulture is complete without references to John Chapman (Johnny Appleseed), an eccentric wanderer, who influenced the planting of more pioneer orchards and perhaps aroused more horticultural interest than all other influences combined. Little is known of his history except that he was from New England and came from Pennsylvania to Marietta in 1801. He collected apple seed from the cider presses of western Pennsylvania and took them down the Ohio River in canoes. On horseback, or on foot, with a sack of apple seed, he traveled over most of central and northern Ohio and parts of Indiana, planting his "nurseries," and selling or often giving away his trees. The pioneers knew him as "Johnny Appleseed." Few knew him by any other name. He believed grafting to be "against nature"; hence all his nurseries and orchards were seedlings, and much of the fruit produced on them would by present standards be considered worthless. His nurseries, which were scattered along the Muskingum, Licking and other rivers, were simply cleared spots in the forest, where he planted apple seeds and which he surrounded by a brush fence to keep out livestock. His operations extended from the Miami River to the lake, but were confined more particularly to central Ohio. Thousands of pioneer farmers received their first apple trees from wandering Johnny Appleseed in exchange for food and a night's lodging. It would have been fortunate had he confined his attention to apple trees; but he also scattered the seed of hoarhound, dog fennel, catnip, pennyroyal and other herbs, which he considered to be valuable medicines, and thus widely disseminated some plants that have since become weed pests. For 46 years he was a well-known and welcome visitor throughout Ohio.

During the Pioneer Period a few of the surplus apples were made into cider and some were dried. In the form of vinegar and as dried fruit they formed a part of the cargoes going down the river. The fruit of the period was not seriously affected by either

diseases or insects. Most of the troubles of the modern orchardist are due to imported pests that have been brought in since pioneer days.

The Rome Beauty apple.—The Rome Beauty apple is Ohio's principal contribution to the valuable fruits. Its origin is due to accident. Joel Gillett, of Rome Township, Lawrence County, received in 1816 a bill of trees from the Putnam nursery at Marietta. Among them was a seedling tree. The tree was given to his son, Alanson, with the injunction to plant it and to see what would come of it. It was planted near the Ohio River. Some years later apples of exceptional quality were observed on it. Solomon Churchill made the first grafts from the original tree, but H. N. Gillett was instrumental in its propagation. Different nursery companies obtained scions, and it was extensively propagated and soon became a standard variety under the name of Rome Beauty, often miscalled Roman Beauty. The original tree was washed away by high water in 1860. The variety is so well known and popular in Ohio as to need no description. It is a leading commercial fruit throughout the area best adapted to its culture. While the tree is not a thrifty grower, it is a prolific bearer of beautifully colored fruit of fair quality.

HOPS

Hops were a part of nearly every pioneer garden; and, while grown principally for home use, a small amount was marketed, particularly in the northern part of the State. The extensive production of hops in Lake, Ashtabula, Belmont, Fairfield and a few other counties did not begin until later.

TOBACCO

Tobacco was introduced both from New England and from Kentucky and Virginia. As an early pioneer crop it was of small importance, at first being grown in gardens for home use only. It was an article of commerce to some extent in the Western Reserve, where the surplus tobacco was manufactured into cigars by the women of the household and exchanged at the country store for groceries. This was particularly true in Ashtabula County.

The tobacco industry really had its first important development in eastern Ohio, in the territory now comprised in the counties of Belmont, Guernsey, Monroe, Washington, Morgan, Perry, Athens and Hocking, from which it extended westward into adjoining counties. As early as 1825 there was considerable tobacco being produced in this section. It was a very low grade of export tobacco,

most of which was shipped to France, where it was used in the dyeing industry. The tobacco was fire-cured in tall log buildings, was afterward packed in hogsheads and hauled overland to Baltimore. It became the leading crop over much of the district named after 1830. Tobacco was introduced into southwestern Ohio by the pioneers from Kentucky.

Concerning the cultivation of tobacco Atwater says:

> The cultivation of the yellow leafed tobacco has been attended with signal success in our hilly region. This kind of tobacco sells higher than any other in several European countries, such as Holland and Germany. It has sold even in Ohio, sometimes as high as ten dollars a hundred, in the leaf. It is cured in a particular manner, and grows only on rather a thin soil, such as exists in our hilly region. It grows on new lands, just cleared of their woods. A crop of wheat does well on the ground where the tobacco had been grown in the preceding season. Instances like the following have often been known. With one hundred dollars, a farmer has purchased eighty acres of hilly land, in the woods, which he, and his family, cleared off, or deadened what timber he and they did not clear off. He then planted the whole in yellow-leaf tobacco, the first year, except such land as he reserved for corn and vegetables. He erected his houses of logs, in which he dried his tobacco, by the aid of fire. In the winter following, he sold tobacco enough to enable him to purchase six hundred and forty acres of the most fertile land, in some other part of the state. In the meantime, he had a crop of wheat coming forward on the same land where the tobacco had grown. The latter crop, when arrived at maturity, he sold for money enough to enable him to remove to his large farm, and to go forward with his improvements there. In a few years he became a wealthy and independent farmer. This yellow-leaf tobacco is cultivated in Fairfield, Hocking, Perry, Licking, Guernsey, Belmont, Stark, Muskingum and many other counties in the hilly region.[1]

The Census for 1820 contains no data as to crops, but there were tobacco factories in Hamilton, Montgomery, Muskingum, Perry, Washington and Jefferson Counties, manufacturing "cut, spin-twist, snuff and cigars." The first two of these counties represent the southwestern field, and the others the eastern field.

PIONEER LIVESTOCK

Horses.—The horses brought in by the pioneers were of a very inferior quality. Those from New England were particularly poor, being of degenerate English breeds. They were small, ungainly and undependable. If a fair specimen did chance to appear, it was promptly sent east. They were only slightly surpassed by those coming with the southern immigration from Virginia and Kentucky, which had an infusion of Thoroughbred blood and were frequently good saddlers. It is probable that the Pennsylvania Dutch settlers,

[1] *History of Ohio* (1838), p. 50.

who first located through the east-central part of Ohio, brought the best farm horses, some of which, the Conestoga, were good draft animals. Horses were not, however, common work animals during the early part of the period. Oxen were so much better adapted to the clearing of land and to pioneer conditions that they were generally used for agricultural and transportation purposes. Horses were sometimes used in combination with oxen.

Shakespeare, the first "blooded" horse in Ohio, was brought to Butler County about 1816. He was an animal of superior size and appearance and proved to be of great value as a breeder. He was sired by Valerius, a colt of Colonel Smock's Badger, of Maryland, and out of a dam by Don Carlos. He was extensively used as a sire throughout southwestern Ohio, where for 20 years a Shakespeare was considered the standard of quality.

William P. Strader brought to southwestern Ohio in 1825 the stallions, Defiance and Flag-of-Truce, from New Jersey, and 2 years later an excellent stallion by imported Expedition. About the same time, the Messenger and imported Diomed stock were introduced, both in eastern Ohio at Steubenville and in southwestern Ohio in the Jersey settlement in Warren County. These produced a marked influence on the horses of both sections. Thirty years later the horses of Warren County were said to be the best in that part of the State.

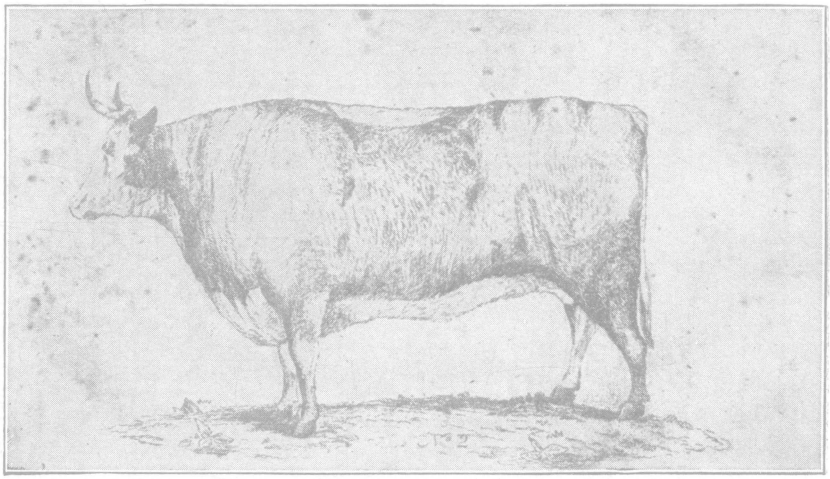
As early as 1828 the French began settling in Stark County and introduced the Norman horse there, though there is no record of purebreds. Selim, Post Boy, Timoleon, Eclipse and Florizel stock were also in the county, and were crossed on descendants of the Norman, Conestoga and Flemish stock of the Dunkards, Mennonites and Amish.[1] The beginning made at this time has been maintained and this section of Ohio (Stark and Wayne Counties) has through all these years remained a leading draft-horse center of the State. Louis Napoleon and Pleasant Valley Bill, the two great Percheron stallions that greatly influenced horse breeding not only in Ohio but throughout the Middle West, were not brought to Ohio until 1851.

As early as 1825 there were race courses at Cincinnati, Chillicothe, Dayton and Hamilton, which had regular fall meetings. Later, courses were opened at about 10 other points. The breeding of the race horse in Ohio did not develop greatly until after 1830.

Cattle.—The cattle of the Pioneer Period were of even more uncertain breeding than the horses. The cows were triple-purpose animals: work, milk and beef. While steers were preferred as work

[1]Ohio Agr Rpt. (1857), p. 350

cattle, it was not at all uncommon to work the cows. In the Western Reserve there appear to have been two breeds of natives: the brindles and the yellows, the former being considered better milkers. The first improvement over the native stock was from Virginia and Kentucky, through the Goff and Sanders' importations. Grades of both the Patton and Sanders Shorthorns as well as the Longhorns were in the Scioto and Miami Valleys quite early. John Patton removed from Kentucky to Ross County, Ohio, in 1800, and brought with him some of the "Patton" stock, which were descendants of the Goff importation into Maryland in 1773, and were excellent beef animals, sometimes reaching a weight of 3,000 pounds. They became quite widely disseminated, particularly in the Scioto Valley.



A specimen of the Patton breed
(from The Western Farmer II [1841], p. 72)

Judson Canfield brought a three-quarter blood Holderness bull into Trumbull County in 1803, which was probably the first improved bull in northern Ohio. In the following year Captain Jonathan Fowler, of Poland, took to the Philadelphia market a large drove of cattle. They were procured from General Wadsworth, James Doud and others in Canfield. This was probably the first drove of Ohio cattle taken over the mountains. As early as 1808 cattle were being taken from the Scioto Valley to eastern markets. These droves were the beginning of a business which in later years became an important feature of the agriculture of this part of the State. It is estimated that, from about 1825 until the building of

the railroads, cattle to the number of 15,000 were driven east each year, whose value exceeded $600,000. Besides these, large droves crossed the State from Indiana and Illinois.

The greatest event in the history of the cattle industry of the West was the importation of English Shorthorns or Durhams made by the Ohio Importing Company in 1833.[1] This company was organized in Ross County by Governor Allen Trimble, George Renick and Gen. Duncan McArthur and others to promote the interests of agriculture and to introduce an improved breed of cattle into the State. The sum of $9,200 was subscribed for that purpose in shares of $100 each. The company appointed Felix Renick as their agent to go to England and buy the cattle. Mr. Renick and two assistants, E. J. Harness and Josiah Renick, left Chillocothe for England, January 30, 1834. They made a careful inspection of several different breeds and selected the short-horned Durham. Of this breed they secured 19 animals from the herds of Bates, Ashcroft, the Duke of Leeds, Whittaker, the Earl of Carlisle, Paley and Mason. These selections represented the best blood and some of the best individuals in England. The cattle were brought safely across the ocean and driven over the mountains to Ross County, where they arrived in time to be exhibited at the county fair, October 31, 1834. Further importations followed during the next 2 years, and a great sale was held at Mr. Renick's Indian Creek farm, October 29, 1836. The stock was in great demand and sold at high prices for that time. The highest price paid was by John I. Van Meter, of Pike County, who bought Teeswater and her calf, Cometess, for $2,225. In all 48 head of cattle were sold. The company closed its business in 1837, declaring a dividend of $280 a share on each of the 92 shares of stock. This was the beginning of a development which made the Scioto Valley famous throughout the West for its Shorthorns, or, as they were then called, Durhams. Out of it grew the great London (Madison County) sales of later years which attracted buyers from all sections of the country.

Dairying.—Cheese from the pioneer dairies was among the first shipments to southern points from the New England settlements at Belpre in Washington County. In down-river markets this cheese became famous for its quality. George Stillson, Trumbull County, took 800 pounds of cheese to Pittsburgh in 1803. He began his sale at 16⅔ cents a pound, but found the cheese in such demand that he sold the remainder of the load at 25 to 37½ cents a pound. Harvey Baldwin in 1820 took the first cargo of cheese down the Ohio River

[1]Ohio Agr. Rpt. (1857), 301 ff.

from the Western Reserve. The cargo consisted of about a ton of cheese, which had been hauled by ox teams from Aurora to Beaver Falls, Pa. This proved a profitable venture and was the real beginning of the cheese industry of the Reserve. Soon thereafter shipping cargoes of cheese south became a regular business, and its home manufacture became an important feature of the agriculture of northeastern Ohio. The cheese boats stopped first at Wheeling and at all important points down the river to New Orleans. Prices varied at different ports and in different seasons, 25 cents to 35 cents a pound being the usual price. The price received by the farmer's wife at the country store was often but 3 to 5 cents a pound.

The cheese factory did not develop until during the Civil War; however, there appears to have been at least one such factory in Ohio before 1820. The United States Census for that year reports a factory in Champaign County, employing one man and five women and using 12,500 gallons of milk, for which it paid $365, or less than 3 cents a gallon. The total value of the yearly output was but $1,226.

Sheep.—The pioneer kept a few sheep for the same reason that he raised flax, that is, to supply material for clothing. When these animals were first brought to the West, they caused much wonder among the Indians. We do not know when or by whom the first sheep were brought to Ohio, but probably they came soon after the first settlement. The danger of attack by wolves made the business extremely precarious. It was necessary to put the sheep in a wolf-proof inclosure or fold at night. This was usually a high board fence sloping inward; thus the wolves could get in, but could not get out. Once inside and the wolves found they were trapped, they would not harm the sheep. The native sheep are described as rather large-bodied, long-legged, coarse-wooled animals. They were very wild and could jump any ordinary fence.

The first Spanish Merinos were probably those which Seth Adams brought to Muskingum County from Massachusetts in 1801. Adams moved from Zanesville to Dresden in 1807 and began breeding sheep there, but soon became discouraged with the unfavorable conditions and returned to Zanesville. Adams' personal experience with sheep was unfortunate, and he disposed of his own flock, though he continued his interest in the breed as agent of Colonel Humphreys, who had brought the breed to New England from Spain. Through Adams, Israel Putnam and Paul Fearing in 1810 introduced the breed into Washington County by buying two pure-

bred and fifteen half-blooded rams, which were turned in with Putnam's flock of native ewes on the Muskingum. Fearing bought from Colonel Humphreys one purebred Merino ram, in 1811, for which he gave 1,600 acres of land.

About the same time as the introduction of the Merinos by Adams, Thomas Rotch, a Quaker, brought a small flock of the same breed from Connecticut to Stark County. A part of these were of the Humphrey's importation. Rotch was a public-spirited man, enthusiastic regarding his sheep, and did much to popularize the breed in this section of the State.

William R. Dickinson, of the firm of Wells and Dickinson, manufacturers of woolen goods at Steubenville, bought of Rotch in 1809 three of the original sheep; later he brought to the county a number of Spanish Merinos from Vermont and New Jersey, and in 1815 bought a large flock of Merinos from James Caldwell, of Pennsylvania. These were pastured in Stark County and by 1824 had increased to 5,500 head. The Wells-Dickinson firm failed in business that year, and the flock was dispersed in 1830. At the dispersion sale, unusually low prices ruled. Five ewes and five rams, the top of the flock, brought an average of only $22.50 a head, while 1,100 ewes and wethers of first and second quality brought but $3.16 a head. The flock was widely scattered not only throughout Ohio but in Indiana and Michigan as well. A number of the flock remained in Stark and adjoining counties and became the foundation stock of the region that later became the leading sheep-breeding section of the State. The Spanish Merino was a light shearer, often yielding but 1½ pounds of wool and rarely more than 3½ to 4 pounds. The wool was remarkably fine in quality. Dickinson crossed his sheep to some extent with the Saxony and thereby materially increased the weight of the fleece. He was awarded a silver medal in a contest in 1826 at Baltimore, given under the patronage of the Brazilian minister, for the ram that would shear the most wool.

Woolen mills were established rather early in the century. The Wells-Dickinson mill at Steubenville was in operation in 1812. It was equipped with machinery adapted to the manufacture of the finest kind of broadcloth. The business was at first prosperous, but, with the conclusion of the war and the lifting of the embargo, the markets were filled with foreign woolens and merchants gave them a decided preference. The company had lost more than $40,000 by 1820. For a while there was hope of governmental protection of the

infant industry, but this hope was given up; the industry languished and the firm failed. This failure of the woolen industry added another discouragement to the woolgrower.

Small woolen factories existed quite generally throughout the settled portion of Ohio. The Census of 1820 reports factories in 30 counties consuming more than 400,000 pounds of wool. Most of these factories were small, doing a custom business. The farmer brought his small clip of wool to the mill to be carded, fulled and dressed, the price of the period being 8 cents a pound for the carding, 15 cents a yard for fulling and 10 cents a yard for dressing. Woolen cloth sold at from $1 to $4 a yard. Woolen clothes were used only for "best," or Sunday wear. A wedding suit of broadcloth was often handed down from father to son. After being carded the wool was often taken home, mixed with flax and made into "linsey-woolsey" for women's wear. When mixed with cotton it was manufactured into "jeans" for men's wear.

There was much variation in the price paid for wool. L. J. Putnam, in a letter to the State Board of Agriculture (1857), says concerning the high price paid by his father, Israel Putnam, for sheep in 1810: "It proved a profitable venture, wool selling at that period at from 25 cents to $1 a pound—$1 for full blood, 75 cents for three-quarter blood, 50 cents for half-blood, and 25 cents for one-quarter blood." The price of native wool is not given but was probably still lower. Considering that the great bulk of the wool would grade as native; that the average fleece weighed not more than 2½ pounds; that mutton was not a marketable product; and the natural difficulties in the way of sheep breeding, it is small wonder that the industry did not develop greatly during the Pioneer Period.

The flocks were given but little care. No shelter was thought necessary and little food was provided. The hardy, fleet-footed "natives" fitted in well with the pioneer conditions and served the purpose for which sheep were kept quite satisfactorily.

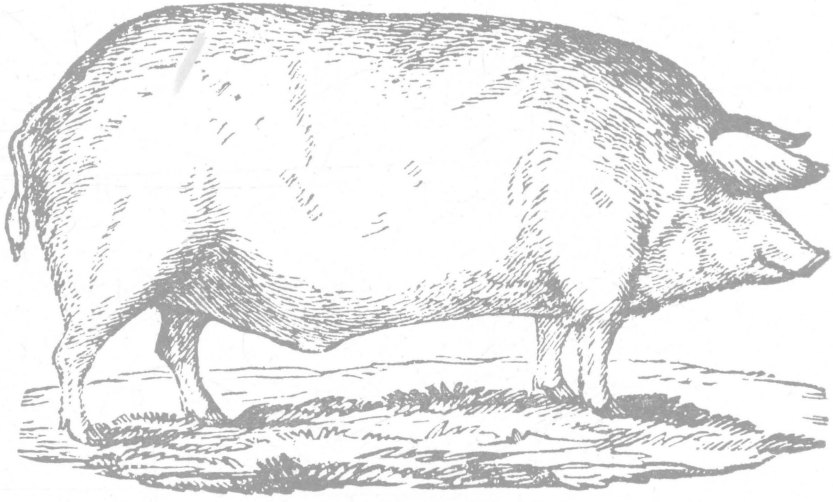
Hogs.—Even before the settlement of the State there were wild hogs in the woods. The hogs brought in by the first settlers were but little if any better. They were of uncertain breeding, known generally as "razor-back," "elm-peeler," "rail-splitter" or "sun-fish" hogs. They were long-legged, slim-bodied, fleet-footed, slow-maturing animals, with exceedingly large heads and long noses. They ran in the woods in a semiwild condition and were often ferocious animals. The old sows when suckling young were particularly vicious. The hogs were fattened for the most part on mast

(acorns, beechnuts and so forth), and were rarely marketed or killed for meat under 2 years of age. At times, particularly when there was little mast, they were finished on corn. Each farmer had his mark, usually a combination of slits in the animal's ear, which was recorded with the township clerk. Late in the autumn, the hogs were rounded up, weighed one at a time on steelyards, and great herds driven to Baltimore or other eastern markets. The eyelids of the wildest hogs were often stitched shut after which operation they would keep with the herd on the drive. Pork houses were kept in connection with all the stores; and hams, shoulders and side meat was salted, packed in barrels and shipped south on the river flatboats.

Before the close of the period, home markets at Cincinnati, Manchester, Chillicothe and other places had begun to develop. Cincinnati later became known as "Porkopolis" from the great amount of pork packed there. The first packer in Cincinnati of which there is record was Richard Fosdick, who began operations in a small way in 1812. The business did not develop rapidly, as in 1820, according to the data collected by the Census, but 1,200 barrels were packed in Hamilton County. Scioto County at this time was packing 57,500 barrels. In later years the streets of Cincinnati were often entirely filled with hogs, the droves being brought there from the southwestern counties of the State. Hogs in northern and central Ohio were driven both to Detroit and to eastern markets at New York, Philadelphia and Boston. They were also shipped by lake to Montreal and Quebec, for the Hudson Bay Company. Extremely low prices ruled throughout the period; $1.50 per hundredweight delivered at Cincinnati was not an uncommon price. In the interior prices were much lower. The hogs were usually gathered by professional drovers and speculators.

Probably the first improvement of the common "woods" hog was made by the Society of Shakers in Warren County in 1816, when the Big Chinas were brought from Pennsylvania; two of these animals were pure white and one was white with sandy patches. They were crossed on the natives and were the first step in the development of the Miami Valley hog. Other breeds such as the Byfield, Russian, Irish Grazier and the Berkshire were introduced, but they were not systematically bred and had little influence toward breed improvement. The Miami Valley hog, also known as the Warren County, Butler County, Magie- and Shaker-hog, was the progenitor of the Poland China breed. There is much controversy as to the origin of the breed and to the blood lines followed. Un-

doubtedly the Big China was a factor. The name "Poland" is said by some to come from a breed of hogs by that name and by others from a fine specimen of the breed being owned by a Polander. The truth probably is that no one person was entirely responsible for the development of the breed. It is reasonably certain that no new blood has been introduced since about 1834. The name "Poland China" is the result of a compromise when the record association was formed. The name is probably unfortunate. While there is some doubt regarding the breeds from which the Poland China developed and also some doubt as to the individual most responsible for its development, there is none in regard to the place of its origin. It developed in the Miami Valley, and the place of its origin should have been utilized in naming this splendid breed of hogs, which constitutes Ohio's chief contribution to new breeds of livestock.



The Miami Valley hog
(from The Farmer's Almanac [1842], p. 86)

Poultry.—Little can be said concerning the domestic fowls of the period. The Game, Bantam and Dung Hill were the leading varieties. The last could hardly be called a variety, but was simply a mongrel. The Dorkings were a later introduction. Eggs sold at from 2 to 5 cents a dozen, fowls at from 50 cents to 75 cents a dozen. Feathers were in good demand. Among the Pennsylvania farmers particularly, geese and ducks were numerous. There was an abundance of wild turkeys in the forest.

Game.—The pioneer was a hunter and trapper as well as a farmer, and the procuring and shipping of skins, fur and venison

hams was a part of his farm-management scheme. The buffalo was exterminated or had left Ohio by 1800, but bear, deer, wolves, panthers and wildcats were numerous until long after the close of the Pioneer Period. Mink, raccoon, beaver, muskrat and fox abounded. The hunting and trapping of these animals were engaged in more from the standpoint of profit and protection than from pleasure; for not only were the skins and fur a valuable source of farm income, but the animals constituted a constant menace to the livestock and crops of the farmer.

Tanneries existed in 48 of the counties in 1820, using raw materials to the amount of more than $200,000. Besides this, the hatters, of whom there was one or more in nearly every county, required more than sixty thousand skins of raccoon, beaver, muskrat, mink and rabbit. Venison hams not only constituted a part of the farmer's meat supply but were shipped in large quantities down the river. Squirrels and raccoons were a great pest. Often in spite of constant watchfulness they destroyed the corn crop, and continuous warfare was therefore waged against them. Wolves were also so numerous and so annoying that in many counties bounties of $1 to $3 each were offered for wolf scalps. Scalps of another sort were also a source of profit. In the Symmes' Purchase, the society before the peace offered a premium of $125 for each of the first 10 Indian scalps brought in with the right ear attached and $115 each for the second 10 brought in; the requirement of the "attached right ear" being probably to prevent securing two scalps from the same Indian. The English "lovers of fair play," during the War of 1812, gave the Indians an opportunity to get even by paying them a bounty for the scalps of Ohio settlers delivered at Detroit.

ROADS AND INTERNAL IMPROVEMENTS

Communication between settlements was infrequent and always attended with difficulty and not a little danger. Great stretches of forest intervened between the settlements on the Muskingum and those on the Scioto. The journey from the Western Reserve to the Miami country was a much greater undertaking than a transcontinental trip today. The settlements grew up isolated, self-contained, self-sufficing and withal not a little jealous of each other. They were in effect distinct colonies which brought from their eastern homes much local prejudice and custom. Not only was there a New Connecticut, but in fact, if not in name, there was also a new Virginia, a new Pennsylvania and a new New Jersey; indeed, there were

several of each and each growing up for and within itself. The elements that were to go later into the great "melting pot" were present but the force that was to make them coalesce was not. That force was facility of transportation.

Principal roads in 1820
(from A Brief Sketch of Ohio [1842])

PIONEER ROADS

The pioneer roads were for the most part only cleared paths through the forest. Such roads were early opened from Marietta to Zanesville, from Dayton and Lebanon to Cincinnati, and from points within the Western Reserve to the lake. With the removal of the capitol of the State to Columbus trans-state roads were estab-

lished. Some of these were built by turnpike companies and maintained as "toll roads," though they hardly deserved the name of pikes. Many of the early roads followed old Indian trails; Kenton's Trace, Hull's Trail, Harrison's March and Wayne's Path all became important highways directing settlement. In northern Ohio the lake ridges (ancient shore lines of Lake Erie) became important highways.

The first "appropriation" for road purposes within the State was made by the Indians at the Treaty of Brownstown, in 1780, when a strip of land 120 feet wide was granted to the whites for the construction of a road from the foot of the rapids of the Miami of the Lakes to the Sandusky. This road was not opened until 1827 and was the first road in the Black Swamp.

Zane's Trace.—Ebenezer Zane opened his road in 1797 from Wheeling, W. Va., to Maysville, Ky. (See page 76.) Ferries were maintained at the river crossings, and Zanesville, Lancaster and Chillicothe owe their beginning to the Trace. Its influence on the settlement and development of the State was marked. It became the highway from the northern Kentucky settlements to the East. Mills were built at the ferries. Taverns were maintained and little villages grew up. To this road is due the large Pennsylvania element in the population of the counties it crosses. Counties immediately tributary to the Trace contained in 1810 one-fourth of the population of the State.

Early roads and transportation.—As settlements developed, transportation of supplies to the interior and "freighting" products to market became a well-established business. It was carried on by means of pack horses and large covered Pennsylvania or Conestoga wagons. Two hundred pounds was considered a load for a pack horse. One man could manage 12 horses. The wagon rate from Dayton to Cincinnati was 75 cents a hundred pounds. It required a day for a "Conestoga" wagon drawn by six horses to make the journey from Hudson to Cleveland, a distance of but 24 miles. Wheat was hauled from the central counties to Sandusky or other lake ports over roads so bad that 10 days was required to make the trip and return home, often with only a barrel of salt as the equivalent of a load of wheat. Several farmers usually made these trips together so as to help each other through bad places.

Charles Dickens, who visited Ohio in 1839, has given an excellent description of one of the best of these northern Ohio roads. The following is his description of his journey from Columbus to

Sandusky, which gives a good idea of the development of that part of the State:

The road we went over that day was certainly enough to shake tempers that were not set resolutely at Fair down to some inches below Stormy. At one time we were all flung together in a heap at the bottom of the coach, and at another we were crushing our heads against the roof. Now one side was deep in the mire, and we were holding on to the other. Now, the coach was lying on the tails of the two wheelers; and now it was rearing up in the air, in a frantic state, with all four horses standing on the top of an insurmountable eminence, looking coolly back at it, as though they would say "Unharness us. It can't be done." The drivers in these roads, who certainly get over the ground in a manner which is quite miraculous, so twist and turn the team about in forcing a passage, corkscrew fashion, through the bogs and swamps, that it was quite a common circumstance on looking out of the window, to see the coachman with the ends of a pair of reins in his hands, apparently driving nothing, or playing at horses, and the leaders staring at one unexpectedly from the back of the coach, as if they had some idea of getting up behind. A great portion of the way was over what is called a corduroy road, which is made by throwing trunks of trees into a marsh, and leaving them to settle there. The very slightest of the jolts, with which the ponderous carriage fell from log to log, was enough, it seemed, to have dislocated all the bones in the human body. It would be impossible to experience a similar set of sensations, in any other circumstances, unless perhaps in attempting to go up to the top of St. Paul's in an omnibus. Never, never once, that day was the coach in any position, attitude or kind of motion to which we are accustomed in coaches. Never did it make the smallest approach to one's experience of the proceedings of any sort of vehicle that goes on wheels.

We alighted in a pleasant wood towards the middle of the day, dined on a fallen tree, and leaving our best fragments with a cottager, and our worst with the pigs (who swarm in this part of the country like grains of sand on the seashore, to the great comfort of our commissariat in Canada), we went forward again, gaily.

As night came on, the track grew narrower and narrower, until at last it so lost itself among the trees, that the driver seemed to find his way by instinct. We had the comfort of knowing at least, that there was no danger of his falling asleep, for every now and then a wheel would strike against an unseen stump with such a jerk, that he was fain to hold on pretty tight and pretty quick, to keep himself upon the box. Nor was there any reason to dread the least danger from furious driving, inasmuch as over that broken ground the horses had enough to do to walk; as to shying, there was no room for that; and a herd of wild elephants could have not run away in such a wood, with such a coach at their heels. So we stumbled along quite satisfied.[1]

Prices were much better at lake and river points than in the interior, and there also it was possible to get money for farm products. Flour, which brought $6 a barrel at Columbus in 1817, was worth $15 at Sandusky, and corn, which brought $1.50 a bushel at the latter place, was worth only 50 cents at Columbus and but 35

[1] *American Notes*, pp. 167, 168.

cents at Circleville. This difference in price represents the cost of transportation. At this rate it cost $1 to freight a bushel of corn 100 miles.

THE NATIONAL ROAD

The building of a splendid stone road, reaching from Cumberland, Md., to Wheeling, W. Va., and later extending across Ohio and into the heart of the West, was the initial step taken by the National Government in promoting internal improvements. (See page 76.) Construction was begun in 1811 and completed to Wheeling by 1818. The building of the road was an enterprise worthy of the Government, and its completion reflected credit on the Federal authority. The road was 80 feet wide, surfaced with broken rock upon a stone foundation. Massive stone arches spanned the streams. That part of the road between Wheeling and Columbus was not completed till 1833. The cost per mile for this part of the road was but $3,400.

Importance.—The road was of far-reaching political importance, furnishing the needed economic tie to bind the West to the East. The trans-Appalachian country was as completely separated from the East as Italy from France. Farseeing statesmen, like Gallatin and Jefferson, saw in the isolation of the Ohio country the probability of the separation of the West from the Union, and that the danger would become more imminent with increasing settlement, though Jefferson thought it would be a thousand years before the Mississippi Valley would be peopled. That such a fear was not without foundation is evidenced by the more or less open preparation of the Burr expedition at Blennerhassett Island below Marietta and the complacent attitude of the settlements along the Ohio toward it, as well as the strong feeling of sympathy for Burr in his misfortunes.

The act that provided for the admission of Ohio as a state contained a provision seeking to bind the new commonwealth to the Union. Section 7 of this act provides: "That one-twentieth of the net proceeds of the lands within said state sold by Congress shall be applied to the laying out and making public roads leading from the navigable waters emptying into the Atlantic, to the Ohio, to the said state and through the same, such roads to be laid out under the authority of Congress, with the consent of the several states through which the roads shall pass."

The opening of the road fully justified the political sagacity of the statesmen who favored it. Over it flowed a stream of population into the new State, and over it the State sent its great herds

of cattle and hogs to the eastern market. Over it crept the ox cart of the pioneer. Over it thundered the "fast express" and "shake-guts" carrying the United States mail, and over it creaked and groaned the great "Mountain Ships" drawn by 8 to 12 horses, bringing supplies. Politically and economically the building of the National Road was one of the great events of our State and national history.

Freighting goods over the National Road quickly became a great business. In 1822 one of the five commission houses in Wheeling unloaded 1,081 wagons averaging 3,500 pounds each. If this was an average commission house, it would mean the unloading there of 17 wagons a day, or nearly 10,000 tons for the year.

The driving of livestock to eastern markets was greatly stimulated by the building of the road and was greatly increased by its westward extension. Feedyards were established along the road, and the production of corn and oats for sale to the drovers was the type of farming followed on both sides of the road to a distance of 8 to 10 miles. Many farms in Belmont, Guernsey, Muskingum and Licking Counties were greatly impoverished by the exhaustive grain farming, the effects of which are still apparent. Large pastures were also maintained where the animals could be rested and grazed.

THE BUILDING OF THE CANALS

Early attempts at legislation.—Washington and Jefferson had both suggested connecting the Ohio River with the lake as a part of a great canal system. Thomas Worthington, Ohio's first senator, in 1807, asked the secretary of the treasury to report to Congress a plan for opening canals, but the government, which was straining its principles on the grounds of expediency in the construction of the National Road, turned a deaf ear to the canal idea. The Erie Canal Commission was appointed in 1810 by the Legislature of New York and at once asked aid from Congress. Ohio, deeply interested in the success of the Erie Canal, strongly supported New York in her request, but the war with England came on in 1812 and absorbed attention. After the war, New York again took up the agitation and requested Ohio to join her in building the canal. The State was favorable to the proposition and a resolution to this purpose was only narrowly defeated in the Ohio Legislature.

Ethan Allen Brown, of Cincinnati, became governor of the State in 1818. He had long been interested in canals and had corresponded extensively with Hon. DeWitt Clinton, the "canal" governor of New York. In his inaugural address, Governor Brown said:

"To increase industry and develop our resources internal communication must be improved to provide for the surplus products of our state a cheaper way to market." During his two terms, Governor Brown persistently urged the importance of the canal, but the State was poor and national help could not be secured. Propositions to build the canal by private incorporated companies were presented to the Legislature; and this plan was favored by many, but the governor insisted that the project was one which the State could best undertake, and in the end his counsel prevailed. It was not until the last year of his administration, however, that a commission was appointed to investigate the canal proposition. Governor Brown is justly styled the "Father of the Ohio Canal."

The Ohio Canal.—The report of the commission was finally adopted in 1825, favoring the immediate building of the canal. The route adopted, which began at Cleveland and terminated at Portsmouth, was a compromise between the eastern and central routes; and, in order to satisfy the people in the western part of the State, a canal was projected from Cincinnati to Dayton, and its ultimate extension to the lake was promised providing Congress would give a grant of land for this purpose.

Actual construction on the eastern canal began July 4, 1825, at the Licking summit, with Governor Morrow and Governor Clinton, of New York, and a great concourse of people present. On July 21, work was begun on the Miami and Erie Canal at Middletown. Work was pushed energetically from the start. Many farmers took contracts for construction work and many worked by the day on the canal. The community of Zoar in Tuscarawas County received $21,000 for building the canal through their property, which then consisted of twelve thousand acres of land. Sections of the canal were sold to contractors who hired the laborers. Thirty cents and a jigger full of whisky a day was the wage rate at first, for work from sunrise to sunset. Pennsylvania soon began the construction of her canals and wages in Ohio increased somewhat. The building of the canals brought to the State the first important foreign accession to its population. These persons were almost entirely Irish, and they lived in shanty towns along the site of the canal. Such was the beginning of Akron and other less important Ohio towns. Many of these Irish became farmers upon completion of the canals.

Navigation was opened from Akron to Cleveland and from Middletown to Cincinnati in 1827. The eastern canal was not complete from lake to river until 1833.

Other canals.—By a series of acts Congress granted to the State, in 1828, 1,238,521 acres of land adjacent to the Miami Extension Canal to aid in its construction to the mouth of the Auglaize River and to complete that part of the Ohio and Indiana Canal that lay within the boundaries of Ohio. The work on these canals was not completed until 1845.

Importance.—The building of the canals is the work of the pioneers. They were built for and in a large way by Ohio farmers. The opening of the Ohio and Erie Canal is the most clearly defined epoch-making event in our agricultural history. It is true that much of the State was still isolated and remote from markets, but there was now across the very center of the State from the lake to the river a continuous market. Little hamlets along the towpath

grew rapidly into thriving towns. Mills and distilleries were built. The products of the farms could now be sent by canal to Cleveland, thence by lake to Buffalo and from that point by the Erie Canal to the growing eastern markets. The canal also bound the State together. Built by the State, it stimulated state pride, and it brought into relations of trade and friendship the three distinct elements of the State's population: the Puritan, the Pennsylvania Dutchman and the Cavalier, through whose respective dominions the canal passed. They became acquainted with each other along the towpath and began to act as Buckeyes and to forget that they were from Connecticut, Pennsylvania or Virginia.

The development due to the canals is a part of the history of the next period. The earnings of the Ohio Canal in 1832 were $79,982.48, and those of the Miami and Erie Canal $36,643.88. This had increased by 1851 to a total of $799,024.58. After this the receipts declined owing to the competition of the railroads. There arrived at Cleveland in 1833 by canal 386,760 bushels of wheat, 74,913 bushels of corn, 98,302 barrels of flour and 22,758 barrels of pork, and at Cincinnati 4,101 bushels of corn, 137,663 barrels of flour, 21,880 barrels of pork and 56,620 barrels of whisky. These figures indicate the business that was awaiting the canal when it was built. By 1851 nearly four million bushels of wheat and more than four and a quarter bushels of corn were being shipped by the canal through Cleveland, Toledo, Portsmouth and Cincinnati. The toll for wheat, flour and whisky was 7½ cents per thousand pounds per mile for fewer than one hundred miles; 5 cents for each mile in addition to one hundred miles; 3 cents for each mile in addition to two hundred miles. For corn, rye and oats it was 5 cents per one thousand pounds for the first one hundred miles and 3 cents for each mile in addition.

MACHINERY AND METHODS

The farm equipment of the period was crude and cumbersome. An ax, a broadax, a heavy iron hoe, a clumsy wooden-moldboard plow, a wooden fork, a cradle, a scythe and a flail would nearly comprise the entire equipment. To this were occasionally added a roller made from a tree trunk, and a homemade harrow, though a fork of a tree frequently supplied the place of this latter implement. A few farmers had wagons or carts. The sled was a common farm vehicle; and, with the ox teams and the unimproved wood paths, these were better adapted to conditions than wagons would have

been. Usually there was much accumulated hauling, which the farmer tried to get done on the first "sledding snow."

The plow.—All farm work was most laboriously performed; truly "by the sweat of his face did he eat his bread," and it may easily be conceived that his labor income was not very large. A. B. Allen, in 1856, described the method of making a plow, the plan that was common in Ohio before 1830:[1]

> A winding tree was cut down, and a moldboard hewed from it, with the grain of the timber so nearly along its shape as it could well be obtained. On to this moldboard, to prevent its wearing out too rapidly, was nailed the blade of an old hoe, thin strips of iron or worn-out horseshoes. The land-side was wood, its base and sides shod with thin plates of iron. The share was of wood with a hardened steel point. The coulter was tolerably well made of iron steel-edged and locked into the share nearly as it does in the lock coulter plow of the present day. The beam was usually a straight stick. The handles, like the moldboard, were split from the crooked trunk of a tree, or as often from its branches. The crooked roots of the white ash were the most favored timber for plowhandles in the northern states. The beam (frequently 10 feet long) was set at any pitch fancy might dictate, with the handles fastened on at almost right angles with it, thus leaving the plowman with little control over his implement, which did the work in very slow and most imperfect manner.

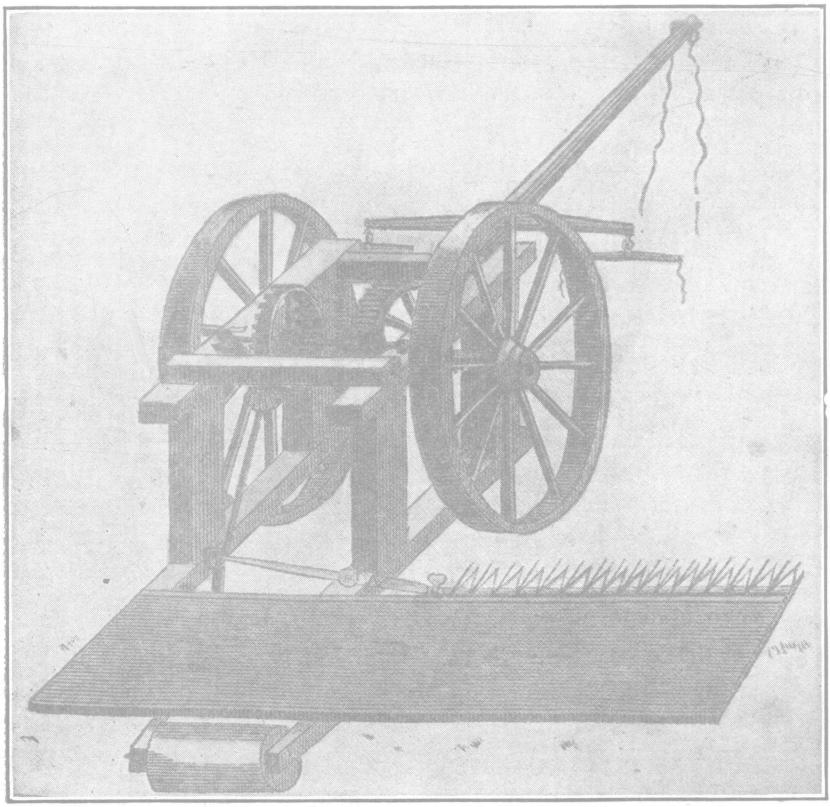
Plowing the stumpy fields with this heavy plow was work requiring great strength. Oxen were much better adapted to this work than horses. Jethro Wood's patent plow—the beginning of the modern plow—was invented in 1819, but was slow in reaching the frontier settlements, and for many years plows continued to be made by local plowwrights. When the steel plows were being introduced, many objected to them as it was said they would poison the land. A few years ago the author heard the same objection being urged against American plows by Mexican "peons."

Rotations.—There was no established rotation system. Wheat often followed wheat for years on the same field; and corn, particularly in the Scioto and Miami Valleys, was grown year after year on the same field.

Conservation of fertility.—Little account was made of manure. It was often considered a nuisance, and barns were sometimes so constructed that it could be thrown into a stream or easily disposed of. Only in exceptional cases was any thought given to soil conservation. The pioneer farmer was a conqueror—a fighter; and fighters and conquerors have never been noted as conservationists. His little farm was still composed of an undue proportion of woodland. Each year he was adding a few acres to the cleared portion.

[1]Report of the Ohio State Board of Agriculture (1856)

If a field showed signs of wearing out, he could clear a new one in the woods. What would be the difference if the whole farm should grow niggardly? Was not the great West calling and inviting him to come? The wanderlust in his own soul made him look almost longingly to the time when he could better his conditions by starting anew.



Hussey's reaping machine (1833)
(From U. S. Dept. Agr. Off. Exp. Sta. Bul. 103, pl. IV, p. 24)

The reaper.—In the invention of the reaper, which came just at the close of the Pioneer Period, Ohio can justly claim a part. Obed Hussey, of Cincinnati, brought out his world-famous machine in 1833. It was first tried before the Hamilton County Agricultural Society, near Carthage, in July, and was patented December 31 of that year. The following year it was introduced in New York and Illinois. In 1837 Hussey began manufacturing his machine at Balti-

more, Md. The Hussey machine was contemporaneous with the reaper invented by Cyrus McCormick of Virginia, which was patented in June, 1833. These two machines were the models for all others that were afterward successful. The Hussey reaper, as an Ohio invention, and for the wonderful influence its introduction had on wheat production, is worthy of particular description.

Hussey's machine, as patented and first constructed, was mounted on two wheels to the rear and somewhat to the right of which extended a platform with the cutting apparatus on its front edge. This platform was at first supported in the rear by a roller and later a wheel was added at its outer edge. The cutter was the unique part of this machine, and consisted of a series of slotted flat bars. The fingers or guards were 7 or 8 inches long, with a slot for admitting the knife, and were fixed solidly to the front edge of the platform, extending forward into the grain. The knife consisted of a series of triangular plates riveted to a flat iron bar and forming a kind of coarse-toothed saw. One end of this saw was attached to a pitman moved by a crank and receiving its motion from the main axle by means of cogs.....

Hussey's cutter is really a novel and surely an original feature of his machine. Although a vibrating knife had been used before, it was not like this, and nothing resembling the slotted fingers had ever been known. These fingers, or guards, were formed of a top and bottom piece, joined at the top and near the back, but leaving a slot through which the knife played. They were fixed securely into the bar on the front edge of the platform at intervals of about 3 inches, and extended forward into the grain about 7 or 8 inches. The cutter, or saw, was formed of thin triangular plates of steel (being made from old saw blades in the first machine), which were riveted side by side on a flat bar. They were 4½ inches long and 3 inches wide at the base, but terminating in almost a point. They were sharpened on both edges and beveled from both sides, unlike the present mower sections, which are beveled from above only. The action, then, was not on the shearing principle, as in Bell's machine, but was rather a chopping or clipping action. The patent specifications state plainly that "the saw teeth shall play clear over the guards both above and below," so that the invention could not have been copied from Bell's shearing plan, as has sometimes been claimed. The doubly beveled sections and closed guard were soon found to be faulty, as the cutters were especially liable to clog. Another feature had considerable to do with the clogging and also increased the draft greatly, i. e., the acute angle which the blade formed with the guard. In order to remedy this difficulty some changes were soon made. The blade was shortened and made more obtuse. About an inch of the edge of each blade near its base was left flat below and beveled only from above, in order to shear the trash and grass which gathered in the back part of the slot, and, lastly, the guard, instead of having a closed slot, was open at the back and upper part, this last modification constituting the principal feature of Hussey's patent of August 7, 1847.[1]

Hussey's reaper was a successful contestant in many field trials during the next 20 years. Many machines were destroyed by laborers for fear their use would reduce wages.

[1]M. F. Miller, *The Evolution of Reaping Machines*, Dept. Bul. 103, Introduction "Agriculture," Eighth U. S. Census.

SOCIAL LIFE OF THE PIONEERS

Social gatherings.—The life of the pioneers, the country life of the frontier, was hard and barren in the extreme. The log rollings, house raisings, corn huskings, wood chopping and harvesting frolics were really serious business, calling for the hardest of work, and were the outgrowth of sternest necessity; likewise were the quiltings, the kraut and apple cuttings and the spinning bees of the countrywomen. That they had their lighter side, and that the pioneer men and women had the happy faculty of getting some fun out of this work, we can well believe; but fundamentally all these "frolics" were undertakings prompted through the need of united action, because they called for work which could not be accomplished individually. The pioneer was strong, courageous, generous and hospitable but had absorbed a part of the Indian's love of solitude. When brought in contact with his fellows in the work we have mentioned, or at the "muster," his strong individuality sought expression in races, in feats of strength, in wrestling matches and frequently in fights. These latter were engaged in, not so much to settle quarrels, as to find out who was the "best man." On "muster day" a dozen such fights would often be in progress at the same time.

Pioneer women.—If the lot of the pioneer farmer was hard, that of his wife and daughters was worse. Their isolation was almost complete, sometimes for weeks at a time. The mother, in addition to the work of the house and the care of a large family, often took active part in all the work of the field. She bound the wheat after the cradlers, while the baby slept in a fence corner. Like her husband, she was strong of body and the outdoor life gave her abundant health, but her life was often bounded by the limits of the farm.

Schools.—School advantages before 1830 were extremely meager. The State school system was not inaugurated until 1825. Previous to that time there were only subscription schools. There were a few excellent teachers, but for the most part they were poor and inefficient. The instruction was confined to reading, writing, spelling, arithmetic and geography. Girls did not study arithmetic as it was considered unladylike for a girl to handle a slate and pencil. The "master" was poorly paid and "boarded around" among the parents of the pupils. A strong body was quite as necessary to a pioneer teacher as a vigorous mind, and he found employment for the former quite as much as for the latter.

Churches.—For the most part the pioneers were men of strong religious habits and sectarian prejudice. The church was the first

and in most cases the only social institution. Compared with modern standards it might be considered as narrow, selfish and superstitious, but it was a social center where the pioneer was softened and refined by the exhortation of the itinerant preacher. For a time at least the people forgot their hard hand-to-hand fight with nature and became humbly suppliant for her favors.

As settlement developed and particularly as transportation was facilitated, social conditions became better; but during the first half-century of the State's progress the life of the farmer and his family was devoted primarily to the problem of existence.

Labor.—With the immense amount of labor required to manage the farm, the farmer found it cheaper to provide for a large family than to hire laborers. A child was considered an asset and not a liability, and the farmer with six or eight strong sons and daughters possessed a distinctive advantage over his unfortunate, childless neighbor. The children worked for the parents without compensation until married. Marriages were usually consummated early, and the young couple built a new cabin and began a new clearing with only their strong bodies, willing hands and loving hearts as guarantees of success.

AGRICULTURAL ORGANIZATIONS

Agricultural societies.—The development of societies or associations for promoting agriculture during this period was limited. Following, in the main, the plan of the New York and New England Agricultural Societies as promoted by Elkanah Watson, there were organized about 1820 several associations "for promoting agriculture, manufacture, etc." Among the first of these was the society organized at Cincinnati by Martin Baum in 1818.

About the same time, an agricultural society was organized at Youngstown in Trumbull County (now Mahoning). Washington County followed a year or two later with a society. The immediate purpose of these organizations was to hold agricultural fairs. The premium list of these fairs is quite suggestive of the agriculture of the period. From the records of the society organized in Delaware in 1833, has been taken the following list of premiums offered at their first fair, which was held in the courtyard.

For best Saxon or Merino buck	$2.00
" " pair pigs	1.50
" " 10-yards linen	2.00
" " 10-yards flannel	2.00
" " pair of woolen socks	.75
" " cheese (20 pounds)	1.00
" " stud	7.00
" 2d best stud	3.50
" best mare	5.00
" 2d best mare	2.00
" best spring colt	3.00
" " bull	5.00
" " cow	3.00
" " pair of oxen	3.00

etc.

Some of these early societies promoted crop-growing or yield-per-acre contests. In such a competition a Washington County farmer produced more than 100 bushels of corn to the acre. Most of these societies were short-lived and were many times reorganized, but they gradually increased in numbers and influence and were the real beginning of the movement that led to the formation of the State Board of Agriculture in 1844. They were independent, self-supporting organizations, in no way patronized by the State and were the expression of the most progressive agricultural spirit of the time.

Cooperative societies.—There were a few attempts at business organizations among the pioneer farmers. The Miami Exporting Company, organized in 1803, had for its purpose the finding of a market for the agricultural products of the State. It later developed into the first bank in Ohio; though for a number of years it was an active force in promoting river navigation, and engaged on its own account in the transportation of products to New Orleans. While not a cooperative organization, it sought actively to enlist the support of the farmers and was made up both of them and of merchants.

More nearly cooperative was the Licking Exporting Company, organized by the Welsh settlement at Granville, in 1820. It was composed of farmers who associated together for the purpose of sending their produce to market. The first attempt was the marketing of hogs. These were put into the custody of representatives of the company and driven to Sandusky, where they were slaughtered, the pork being packed and shipped by boat to Montreal. An agent of the company went with the shipment to Canada to make the sales, where he realized $1.25 per hundredweight for the pork.

Needless to say, the venture was not a profitable one, and it was not repeated. This attempt at business cooperation is the earliest in the State of which we have any account, and possessed most of the elements of ideal modern cooperation: (1) The product was brought together at the point of production; (2) it was transported economically; (3) it was uniformly handled and packed; (4) it was presumably sent to the best market; (5) a representative of the company was at the point of sale.

But in this case the "high cost of living" was not epidemic in Montreal, and the society did not have the courage to try it again. There seems to have been a middleman even this early, and these Welsh farmers sought to eliminate him with the usual result.

The following are a few local prices in Licking County at this time: Wheat 25 cents a bushel, oats 12½ cents, corn 12 cents, flour $1 a hundredweight, chickens 37 cents a dozen, eggs 3½ cents a dozen, maple syrup 6 cents a gallon, whisky 25 cents a gallon, potatoes 12½ cents a bushel. These were the values which were given these articles in exchange for other goods.

The "Shakers."—There were other organizations, not strictly agricultural, but primarily religious, that are of interest in this connection because of the great influence they exerted on agriculture. We refer to the communistic societies of United Believers, or "Shakers," as they were more commonly known. As an example of communism applied to land ownership and farming operations, they form an interesting part of our agricultural history.

The movement in Ohio was a direct outgrowth of the great Kentucky revival, which swept across the river and into southern Ohio in the early part of the century. The society at Union Village, Warren County, was formed in 1805 and was not dissolved until 1913, after an existence of more than a hundred years, and, at the time of dissolution, was in possession of several thousand acres of as fertile, well-improved land as there is in the State. The adherents of this church could own no property of any sort either in land or in goods. On becoming a member of the church, all property was made over to the society absolutely. This gave the society capital with which to develop its large tract of land. Most individual farmers of the period not only did not have capital but were heavily in debt. Home manufacture was universal at this time but the Shakers developed the factory system. A grist mill, a broom factory and other small factories were established, not only to manufacture their own products and to put in marketable form the surplus produce of the society farm, but to do work commercially for

those outside the organization. They were thus able to solve the problem of seasonal distribution of farm labor. In this society, every man and woman worked every day in the year except Sundays. The farm and the farm factory supplemented each other. When there was great need of laborers in the fields, the factories furnished as many hands as were needed; and, when there was little or no work in the fields, the factories furnished work for everyone. With the communistic principle absent, such a system is a possible solution of the highly important problem of affording continuous employment for laborers on the farm.

The society grew in numbers, influence and property. It possessed the money necessary to stock its farm with good livestock and at once took the lead in this line of farming. The best cattle, hogs and horses procurable were bought. Animals from Kentucky, New York and Maryland were brought to the farm. In hog breeding particularly did the Shakers make great progress. The common "woods hog" of this period was an ungainly, slow-maturing animal. The Shakers introduced the Byfield, Big China, Russian, Irish Graziers and other breeds from the East, and soon developed a type of hog quite distinctive in character and greatly superior to the common hog of their section. This influence became widespread and resulted in a general improvement of the hogs of southwestern Ohio.

The Shakers at a later period became famous breeders of cattle, and many high-class bulls of Durham and Patton blood were introduced. The influence of these animals was both salutary and widespread.

The society, by its prohibition of the marriage relation among its members, introduced a factor which inevitably destroyed it. There were no children except such as were adopted, and the society was thus dependent for its growth entirely upon converts from the outside. The only wonder is that with such a restriction it should have endured for more than a hundred years.

The society had other communities in Cuyahoga, Hamilton and Union Counties. The one in Cuyahoga existed for more than 75 years. Its former site is now known as Shaker Heights in the city of Cleveland. The same progressive agricultural habits characterized this peculiar sect everywhere. As a business this effort at communism must be considered successful, though it was often beset by internal troubles, which would have wrecked it had it not been for the religious principle.

Zoarites.—Similar to the Shakers, so far as the practice of communism is concerned, was the Society of Zoar, or Separatists,

of Tuscarawas County. In this society the communistic idea was not a part of the religious creed, but was adopted because of the poverty of the members of the sect, which had sought asylum in America following persecution in Germany.

By combining their small capital they had enough to make part payment on a tract of land in the wilderness of Tuscarawas County in 1817. The land was conveyed to a trustee and private property was abolished. The Zoarites kept up the family relations and allowances were made from the common storehouse to each family.

While the society was agricultural, its members lived in a village community and engaged in mining and manufacture with the same advantageous results that have been noted concerning the Shakers. The Ohio Canal was dug through their property, and they received for their land and labor $21,000. This helped to put the society on its feet. The lives of these hard-working Germans were extremely simple. They worked hard and wasted nothing and in time became owners of more than twelve thousand acres of land, which in 1875 had a value of $1,500,000.

Their success was largely due to their leader, Joseph Bimelar, a man of great shrewdness and business ability. After his death the society declined and was much torn with strife and internal dissension, though it was not finally dissolved until 1898, after an existence of 80 years. The Zoarites were not progressive and continued to practice the most primitive methods of farming and failed to exert such beneficial influence on the agriculture of the State as did the Shakers.

PART II

OHIO AGRICULTURE FROM 1850 TO 1910

J. I. FALCONER

The statistics given in this bulletin, relating to corn, wheat, oats, hay, tobacco, potatoes, barley, rye, buckwheat, orchards and apples, are taken from "Ohio Statistics"; other statistics are from the U. S. Census.

The prices given on page 212 are from the annual reports of the Cincinnati Chamber of Commerce.

The maps and the statistical data are the important part of this bulletin, the reading matter is given as descriptive of the maps. It is hoped that detailed historical studies will be made of the various phases of Ohio agriculture.

DEVELOPMENT OF DAIRY INDUSTRY*

DAIRY COWS

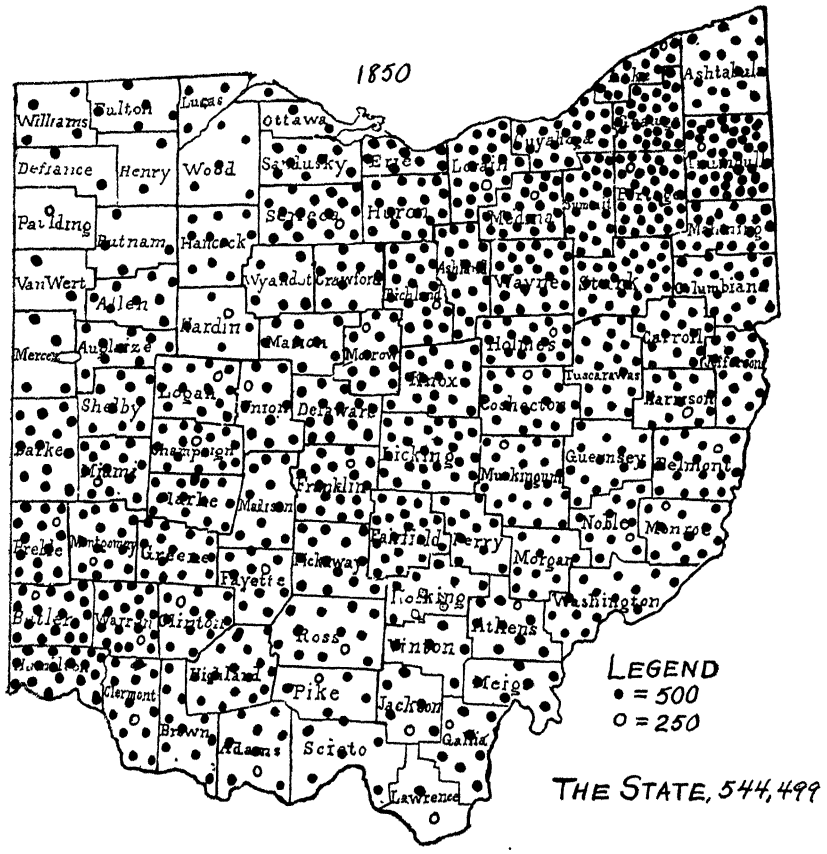
Year	Number
1850	544,499
1860	676,585
1870	654,390
1880	767,043
1890	794,833
1900	818,239
1910	905,125

Early dairy activities.—The figures given for dairy cows are taken from the U. S. Census and represent the number of milch cows on Ohio farms. In 1850 dairying had nowhere in Ohio developed to a regular business except on the Western Reserve. With the growth of cheese and butter exports the dairy industry had expanded rapidly in northeastern Ohio during the 'forties. New England, New York, Ohio and Pennsylvania were at that time the centers of cheese production, the annual export from the United States ranging from 3,000,000 to 17,000,000 pounds. In 1836 the entire state of Ohio was reported to have produced but little more than 1,000,000 pounds of cheese; in 1848 the Western Reserve counties alone sent out over 15,000,000 pounds, chiefly to eastern markets. Until 1840 wool growing and dairying had increased together in this region but by 1850 many farmers who had formerly kept dairies and raised sheep were said to be turning their attention wholly to the dairy business. Of the 20,000,000 pounds of cheese made in Ohio in 1849 more than 75 percent was made in five north-

*For development of cattle industry in general see page 239.

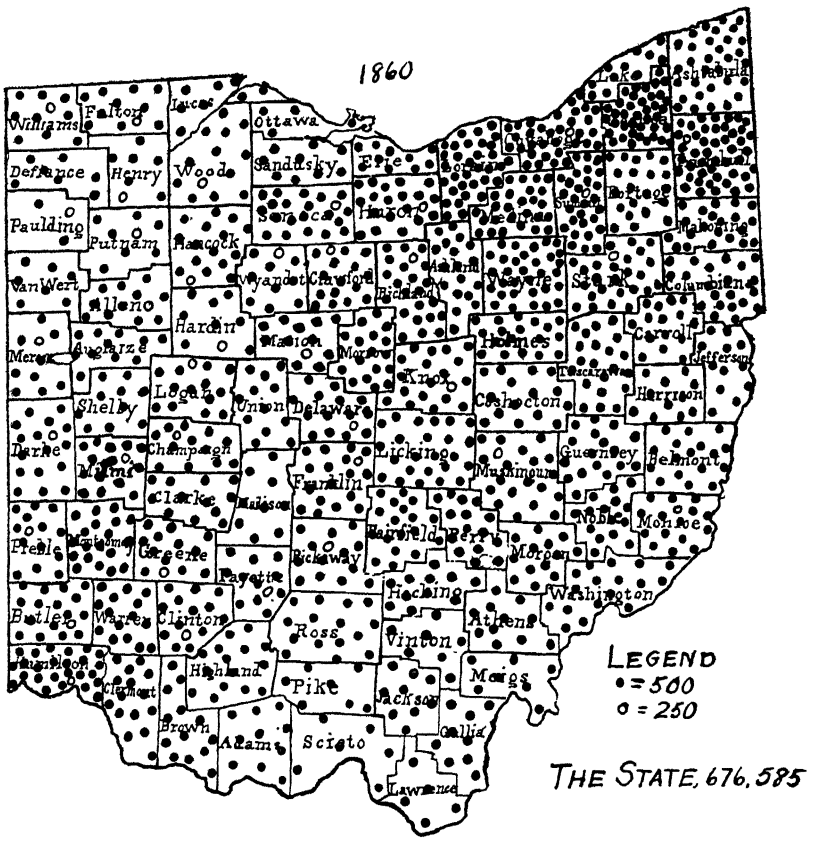
eastern counties. Here the best dairymen were erecting substantial buildings in which to shelter their cows. In many of the larger dairies, herds of from thirty to sixty cows were milked; in the lesser regions from five to fifteen. Dairying was carried on largely in the spring and summer months when the pastures were good. There was little winter dairying.

MILCH COWS—1850



Outside of the Western Reserve counties dairying in Ohio was commonly carried on as a side line, butter was exported by many Ohio counties, but most counties secured a large part of their supply of cheese from the Western Reserve. In the vicinity of the large cities and towns of the State there were milk dairies from which the necessary supply for local consumption was obtained. But cities at that time were small and the demand for milk not large. Prior

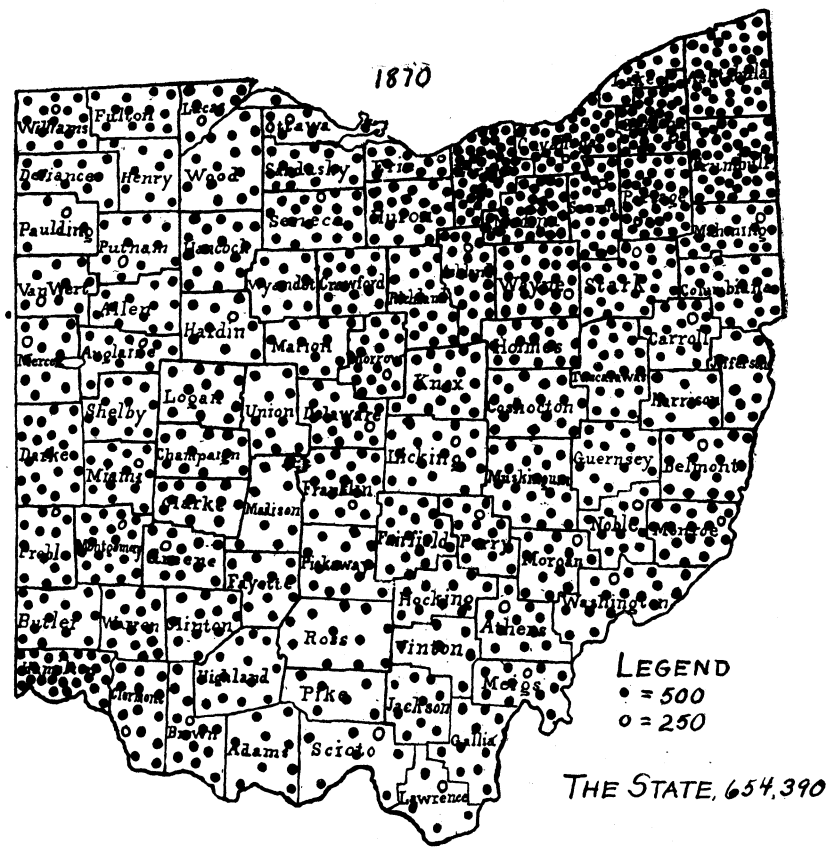
MILCH COWS—1860



to 1850 no city had received any part of its milk supply by railroad transportation, nearby producers met all existing demands by hauling in their own wagons.

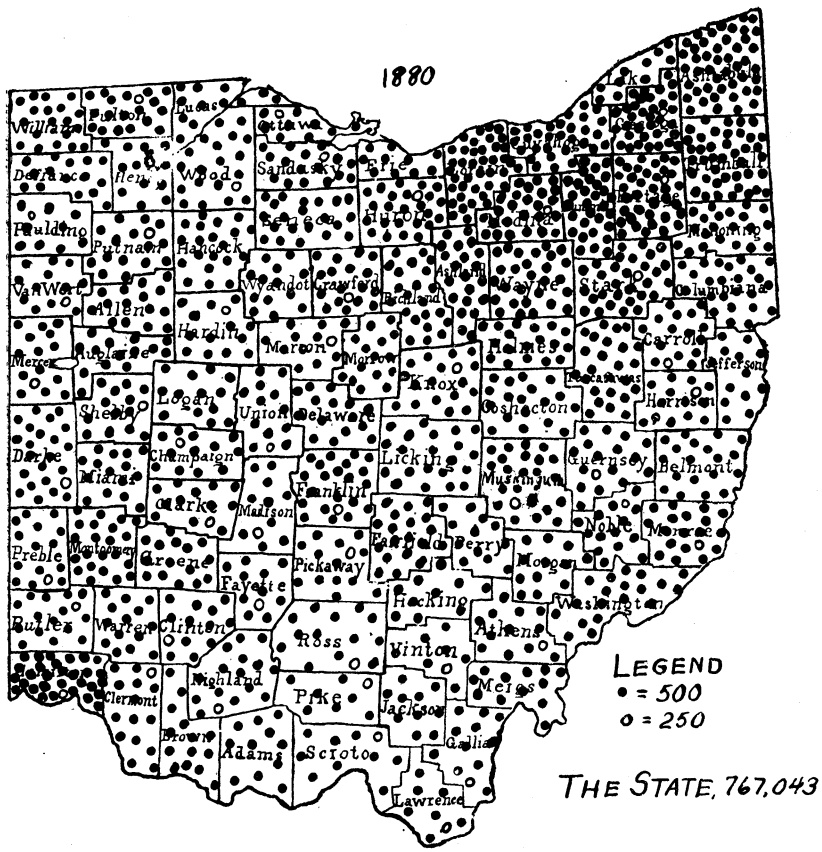
Dairying is increasing.—With the exception of a small decrease during the period of the Civil War there has been a steady increase in the number of dairy cows in the State since 1850. The number of dairy cows in the eastern half of the State in 1910 was nearly the same as in 1860. The increase in numbers for the State as a whole

MILCH COWS—1870



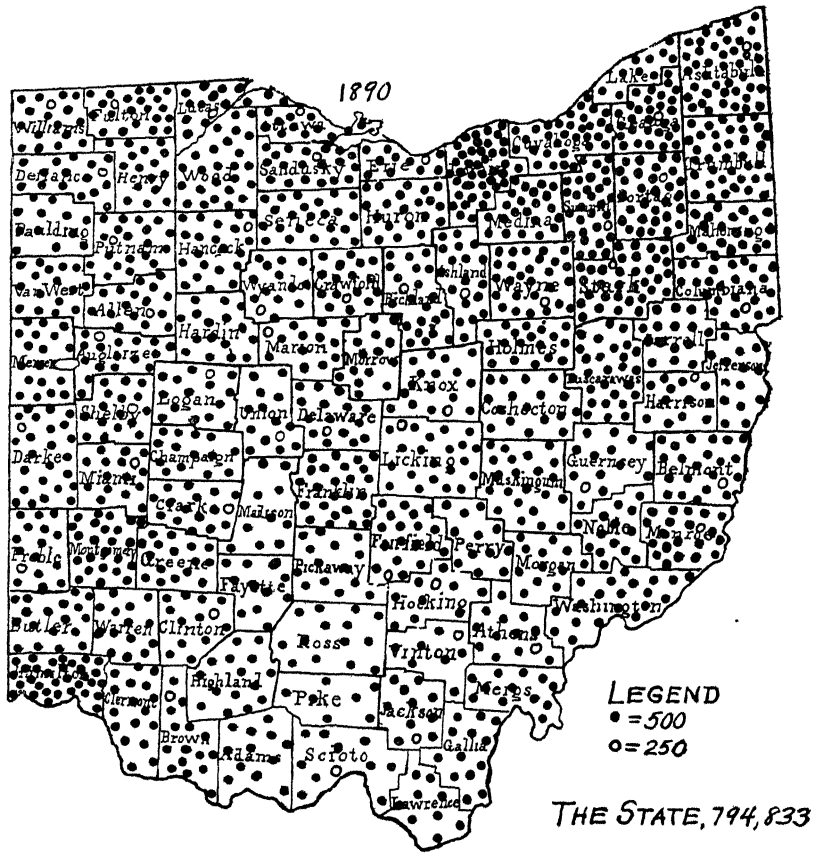
has been largely due to the increase in the western half, especially the northwestern counties which, because of their undeveloped state, reported few dairy cows in 1860. The decade from 1900 to 1910 witnessed a general increase in dairying, only seven counties out of the eighty-eight showing a decrease in number of dairy cows reported. The rapid growth of cities and the development of transportation facilities has induced many to adopt dairying as a specialty instead of following it as incidental to general agriculture.

MILCH COWS—1880



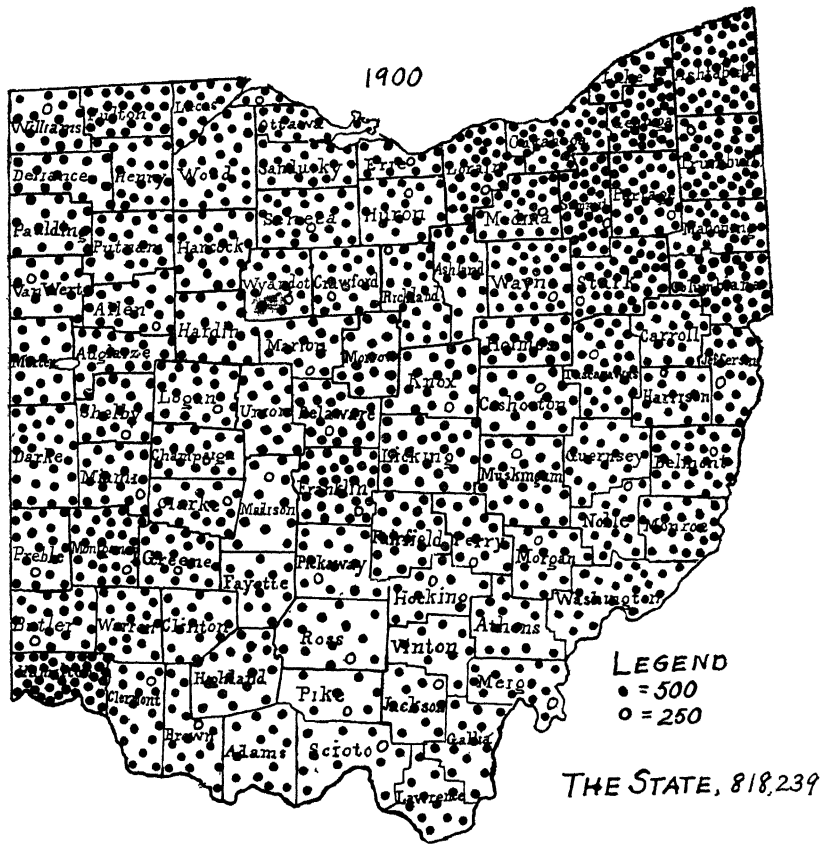
The increased importance of the dairy industry, however, should be measured by the extent of its output rather than by the number of milch cows as reported by the census. There had been little or no improvement in dairy stock previous to 1850. A correspondent from the dairy section wrote as follows in 1857: "The breed of cows which are preferred by almost all our correspondents for dairy purposes are the native stock, or those crossed with the

MILCH COWS—1890



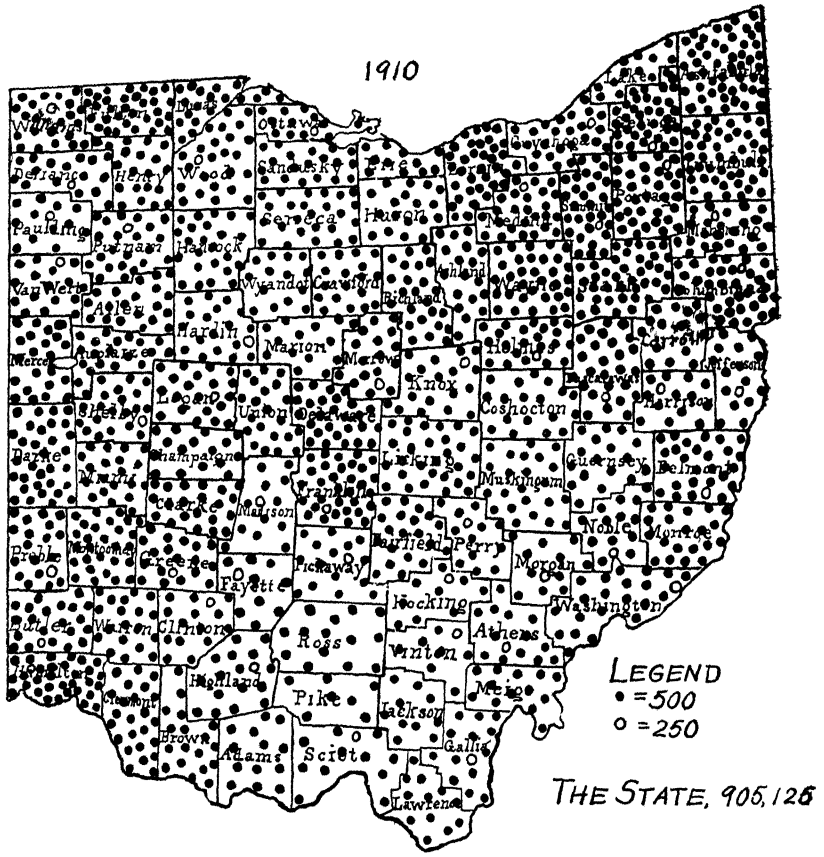
Devonshire breed. The Durham and their crosses, although large and fine animals for the butcher market, are pronounced inferior to our old-fashioned native breed for all dairy purposes." Such was the general opinion among Ohio dairymen at that time. The 25 years following 1855 was a period of marked improvement in dairy stock; fairs, cattle shows and developing markets stimulated an interest. Enterprising importers called the attention of farmers to

MILCH COWS—1900



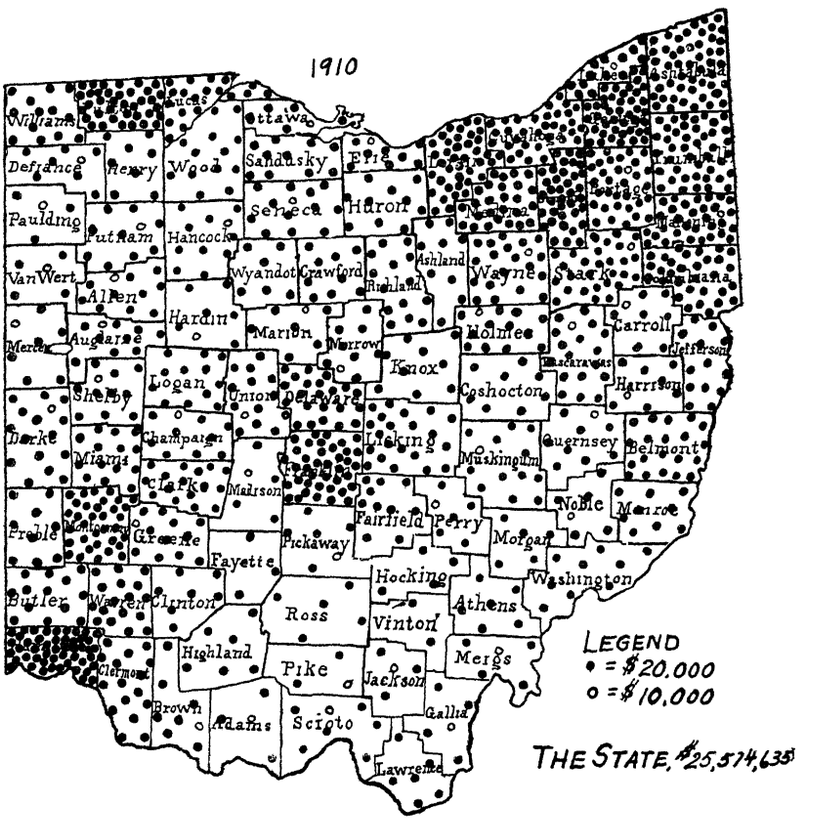
better stock. Breeds of cattle noted particularly for their dairy quality were introduced and began to win favor. The greater part of the improvement in dairy cattle, however, has been made since 1880. Feeding methods also have changed, winter dairying has been stimulated by the introduction of the silo and the extensive use of mill feeds.

MILCH COWS—1910



Receipts from dairy products.—Receipts from dairy products will indicate the importance of the dairy industry in the various counties of Ohio. The map indicates the extent to which the dairy industry is grouped around the larger cities. Northeastern Ohio has always been the center of the dairy industry in the State. Other centers are in the vicinity of Cincinnati, Columbus, Dayton and Toledo. Market milk is now the most important dairy product in Ohio

RECEIPTS FROM DAIRY PRODUCTS—1910



Condensed milk.—Another outlet for dairy products which has rapidly expanded since 1904 is the manufacture of condensed milk as shown by the following table:

CONDENSED MILK MADE IN OHIO

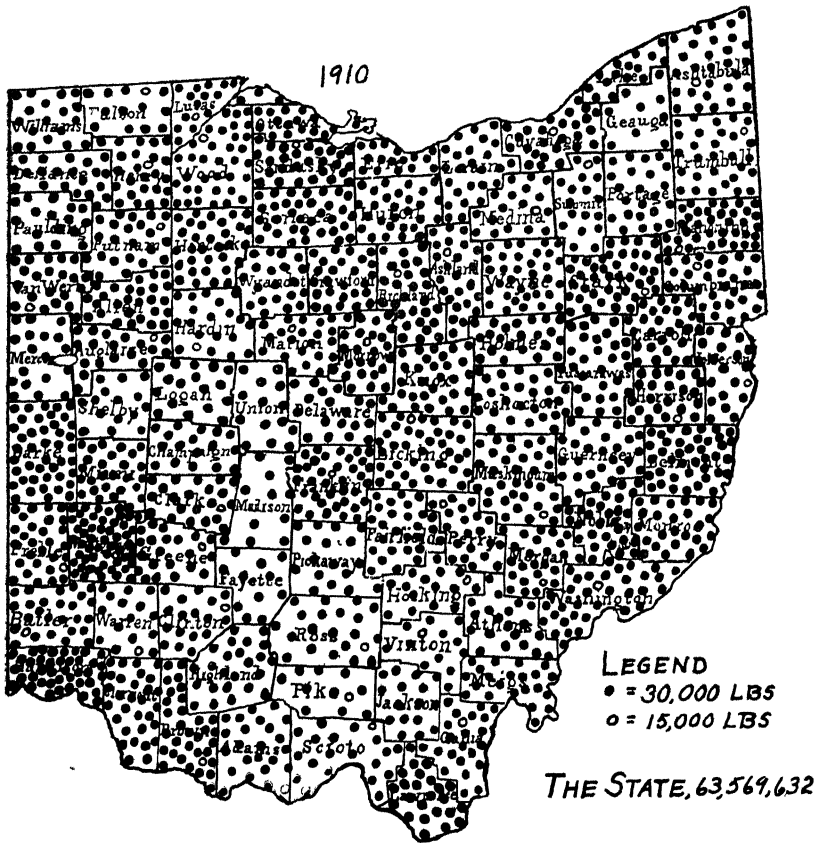
Year	Pounds
1894	100,000
1904	1,947,218
1909	37,655,347

Butter made on farms.—In spite of the development of the market milk trade and creamery manufacture it was not until after 1900 that a decrease was reported in the amount of butter made on the farm. Since that date, however, there has been a decrease in butter making, as will be shown by the following table, giving the amount of butter reported as made on farms in the State in census years. Butter made on farms represents a large portion of the total butter made in the State. In 1899 there were 8,087,631 pounds reported as made in factories; in 1909, 11,860,601 pounds. Ohio has not been a creamery state.

BUTTER MADE ON FARMS

Year	Pounds
1849	34,449,379
1859	48,543,162
1869	50,266,372
1879	67,634,263
1889	74,990,307
1899	79,551,279
1909	63,569,632

BUTTER MADE ON FARMS—1910



An interesting evolution in dairying is shown by the table and maps on cheese production. There was nearly the same amount of cheese made in Ohio in 1899 as in 1859, during that period, however, the making of cheese had shifted from the farm to the factory. From 1899 to 1909 there was a marked decrease in cheese production. While there was a decrease in butter production during the same period it was not as large as with cheese.

CHEESE

Year	Made on farms	Made in factory
	Pounds	Pounds
1849	20,819,542	Figures not given
1859	21,618,893	Figures not given
1869	8,169,486	Figures not given
1879	2,170,245	Figures not given
1889	1,068,083	Figures not given
1899	1,167,001	18,156,527
1909	613,233	11,860,601

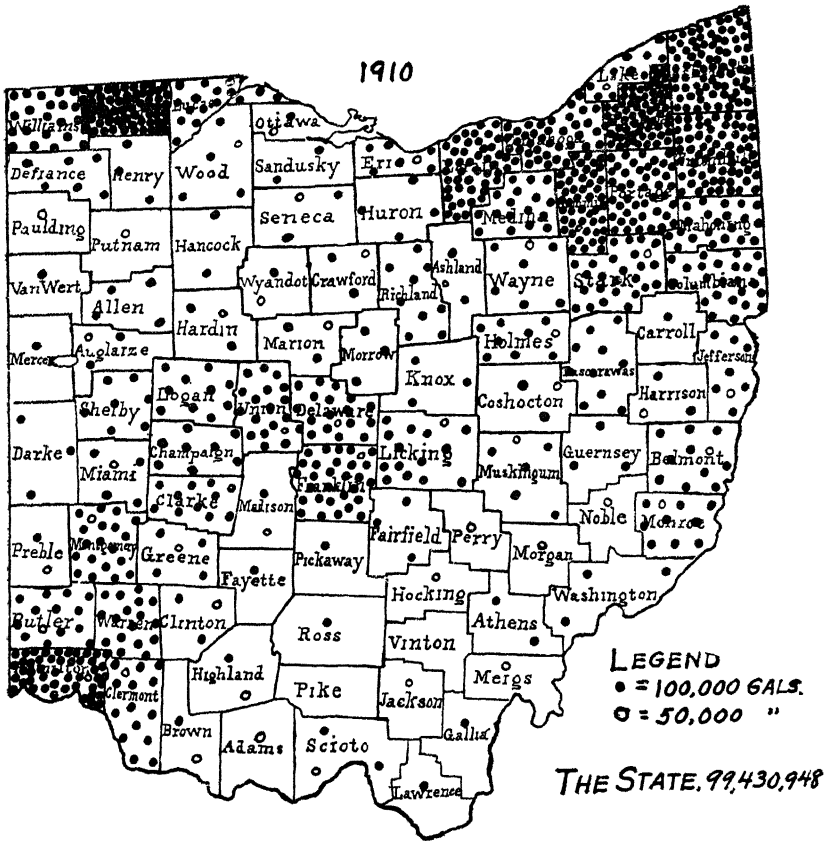
CHEESE MADE ON FARMS—1850

Cheese factories.—About 1850 the first attempts were made to establish the factory system of cheese making in Ohio. In 1847 a factory in Trumbull County was reported to be making 1,000 pounds of cheese per day; in 1849 another was in operation in Ashtabula County. These factories were unlike those developed at a later date in that the early factories collected only the curd which was hauled by teams sent out from the factory. Others were established in adjoining counties. The early factories were apparently unsuccessful as in 1859 they were said to have all closed down, having proved

CHEESE MADE ON FARMS—1910

unsatisfactory. With the failure of these factories, cheese making seemed probably to remain a part of the work to be done on the farm. During the decade of the Civil War, however, cheese factories of the present type were rapidly built. Twenty years later cheese-making had become largely a factory enterprise. With the decline of cheese making since 1900 the number of factories has decreased. From 1899 to 1909 the number of creameries and cheese factories in the State decreased more than 25 percent, due largely to the increasing demand for market milk and cream.

MILK SOLD—1910



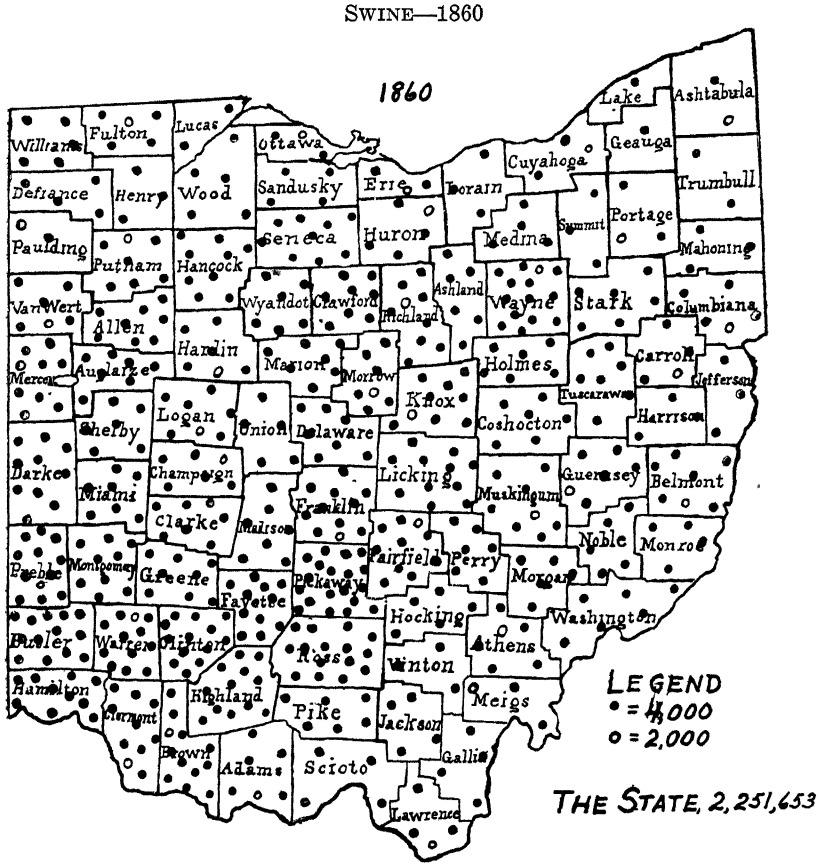
DEVELOPMENT OF SWINE GROWING

Year	Number
1850	1,964,770
1860	2,251,653
1870	1,728,968
1880	3,141,333
1890	3,275,922
1900	3,188,563
1910	3,105,627

SWINE—1850

Ohio evenly divided in 1850.—In 1850 the swine population of Ohio was about evenly divided between the eastern and western halves of the State. During that year hogs sold on the Cincinnati market for between 3 and 4 cents per pound. From 1850 to 1860 there was a general increase in the number of hogs in the State. Prices were relatively good. Every section of the State showed an increase with the exception of the northeast where seventeen counties reported a decrease; in this section all other classes of livestock seemed to be giving way to the dairy cow. During this and the previous decade the swine industry of the country was undergoing a readjustment, every state east of Ohio reported a decrease in numbers, while Ohio and every state to the west reported an increase. The swine-producing center of the country was being shifted to the corn belt states.

SWINE—1860

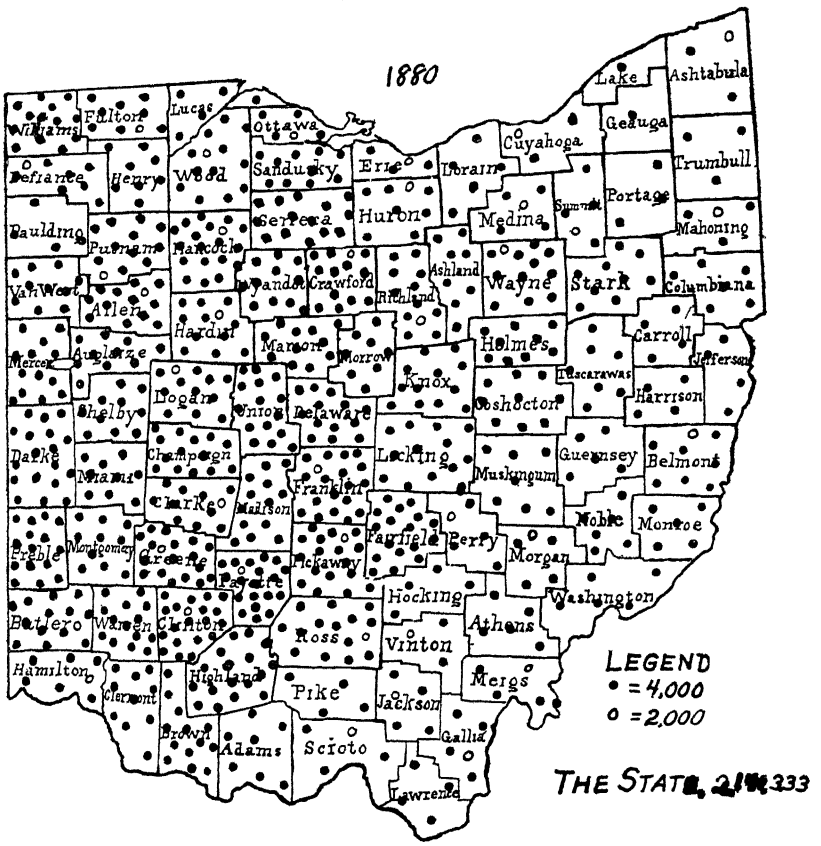


Increase after Civil War.—The decade of the Civil War showed a general decline in swine production as was true of all other classes of livestock except sheep. The years 1870 to 1880 saw a marked increase in swine production in the State. Ohio's swine population nearly doubled during this 10-year period, every county showing an increase. In the eastern half of the State the increase was but normal. In the western half the increase was large, more especially in the northwestern quarter where farm developmnt was progressing rapidly. Hancock County, for example, which reported only 28,299 hogs in 1870 had 74,799 in 1880. Developing markets, the rapid settlement of the corn-growing northwestern counties, and good prices were stimulating swine production.

SWINE—1870

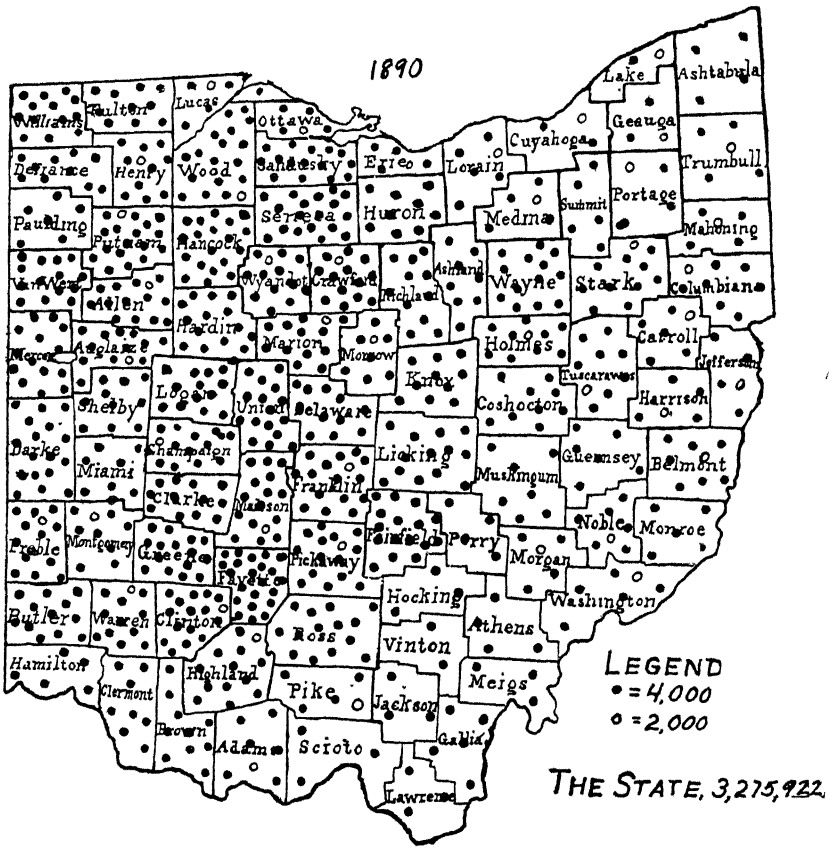
Since 1880, with the exception of temporary fluctuations, there has been little change in the total number of swine in the State. The most noticeable shift has been a decrease in the number in the eastern half of the State. The decrease in this section, however, has been fully made up by a tendency to increase in the west. The decline has been especially large in the counties of the southeastern quarter of the State and in those southern counties bordering on the Ohio River. Fayette, Clinton and Highland Counties which showed a decrease in number of neat cattle from 1900 to 1910, reported a marked increase in number of hogs during the same period, and in 1910 were the three leading Ohio counties in swine production.

SWINE—1880



Early development of breeds.—Previous to 1840 but little attention had been given to the kind of hogs used for feeding. The common swine kept in a large part of the State was an ungainly breed with long legs and snouts, sharp backs, and of a roaming disposition, slow and expensive to fatten. For the packer they yielded small hams and little lard, their sides were "apt to be too thin for mess or clear pork and chiefly fit for bacon." The type was variously known as "alligator," "landpiker," "Razorback," "prairie rooter" and "hazelnut splitter." For the existence which they were usually forced to live they were well adapted. A beginning, however, had been made in the improvement of swine, especially was this true

SWINE—1890



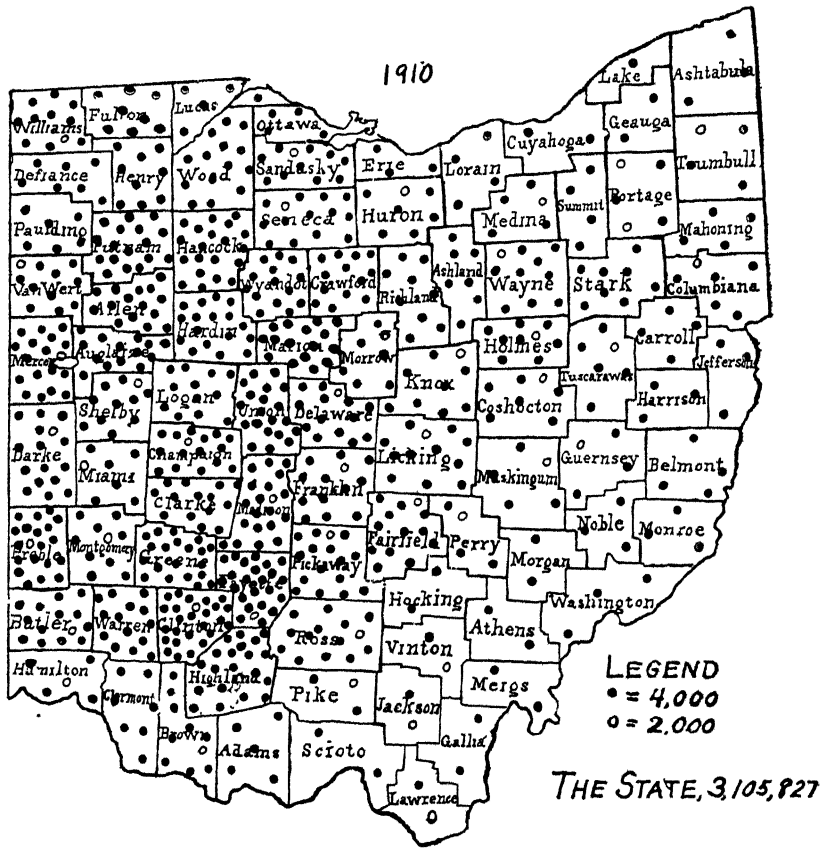
in the Miami and Scioto River Valleys. Besides the Berkshire and Chester County hog, which had been introduced or developed previous to 1840, other breeds or types of improved hogs which were introduced or developed previous to that date were the Warren, County, Byfield, Woburn, Irish Grazier, China, Grass breed, Russian and Essex.

By 1840 there was such a talk in the State about the various breeds of hogs that it was said, "a stranger would have thought that the only business of the country thereafter was to be pork raising." Previous to 1850, however, it was considered necessary

SWINE—1900

by most Ohio farmers outside of the Miami and Scioto Valleys to cross the improved breeds with a good traveling breed so as to enable them more readily to feed upon the mast and pasture, and to give them endurance in being driven to market. Following 1850 the improvement was rapid. Corn rather than mast was now the prevailing feed. Two popular breeds or strains of hogs have been developed within the State by the efforts of Ohio breeders, the Poland China and the Ohio Improved Chester White. Better transportation facilities, markets, and prices, together with higher-priced corn has gradually induced better care and feed methods.

SWINE—1910



DEVELOPMENT OF SHEEP INDUSTRY

Year	Number
1840	2,028,401
1850	3,942,929
1860	3,546,767
1870	4,928,635
1880	4,902,486
1890	4,060,729
1900	2,648,250
1910	2,890,163

Ohio once the center of wool-growing.—During the decade of the 'forties Ohio's sheep population nearly doubled, this increasing continued until 1854 when the climax was reached in Ohio. From 1854 to 1860 the number of sheep in the State remained about constant or declined. In the southern two-fifths of the counties there was a tendency to decline; this was especially noticeable in the grain growing counties of the southwest. In the northern counties there was a tendency to increase.

The center of the wool-growing business in the United States had now crossed the Alleghany Mountains and was located in Ohio. In 1840 New York alone of all the states led Ohio in number of sheep. At the time of the census of 1850, 1860 and 1870 Ohio had more sheep than any other state in the Union. In 1880 Ohio was exceeded in numbers by California only; in 1890 by Texas only; in 1900 by Montana, Wyoming and New Mexico. In 1910 by ten states all except one, Illinois, lying west of the Mississippi River. Ohio was now only a secondary center of the wool-growing business.

Prices paid for wool.—It was not until about 1840 that Ohio farmers began selling wool for cash. During the decade of the 'forties the prices of farm products in Ohio were low. Railroads had only just began to be built and it was difficult to find a market for bulky farm products. Wool, however, could be easily stored until the roads were good, and could then be hauled a long distance to navigable water and a market. The price received for wool was relatively good. During the 'fifties railroads were rapidly extended, better markets were opened for farm products. From 1852 to 1860 there was a period of rising prices for farm products, due, it was said, to better market facilities, the Crimean War and the growth of exports. There was a shift of attention in Ohio from wool growing to other products, especially grain. The result was a decline in number of sheep during the decade. The decline is especially noticeable in the grain-growing counties of the southwest.

The high prices received for wool during the Civil War again turned the tide towards an increase in the number of sheep. Ohio

fine wool which sold for 38 cents a pound in July, 1861, advanced to $1.03 a pound by October, 1864. Much of this apparent increase in price was due it is true to the depreciated state of the currency. The net result, however, was a large increase in the number of sheep. By 1867 there were reported to be 7,622,028 sheep in Ohio. This was the only class of livestock which increased during the decade of the war.

SHEEP—1850

The years from 1866 to 1871 witnessed a decided fall in the price of wool and from that time on there has been a more or less steady decline in the number of sheep in Ohio. In the later years of the 'sixties the decrease in number was especially rapid. In 1868 it was estimated that from 10,000 to 40,000 sheep were killed in each county of the wool-growing section. The average price of sheep in the State fell from $4.58 in 1866 to $1.70 in 1869. The

increase in number of sheep during the period of the Civil War had been so great, however, that with the single exception of the Western Reserve counties every section of the State in 1870 showed a large increase over 1860. In the Western Reserve the development of dairying was said to be driving out the sheep.

SHEEP—1860

From 1870 to 1880 there was little change in the total number of sheep in the State. Thirty-one counties showed an increase while fifty-seven reported a decrease. The counties showing an increase were in the main the same counties as those which today are our leading sheep counties, namely, a group stretching diagonally across the State from the east-central counties to the northwest. In 1880 Licking County reported more sheep than any other Ohio county while Harrison with approximately one sheep to every acre of land had the largest number in proportion to land area.

Decrease in sheep after 1880.—From 1880 to 1890 there was a general decrease in the number of sheep. Thirteen northwestern counties and nine counties in the extreme southwest, however, showed an increase. The decline was the greatest in the east central counties, in the heart of the sheep-raising section. Licking County alone showed a decrease of 88,000 head in 10 years. From 1890 to 1900 this decrease continued at an even more rapid rate, every county showing a decided decrease in number.

SHEEP—1870

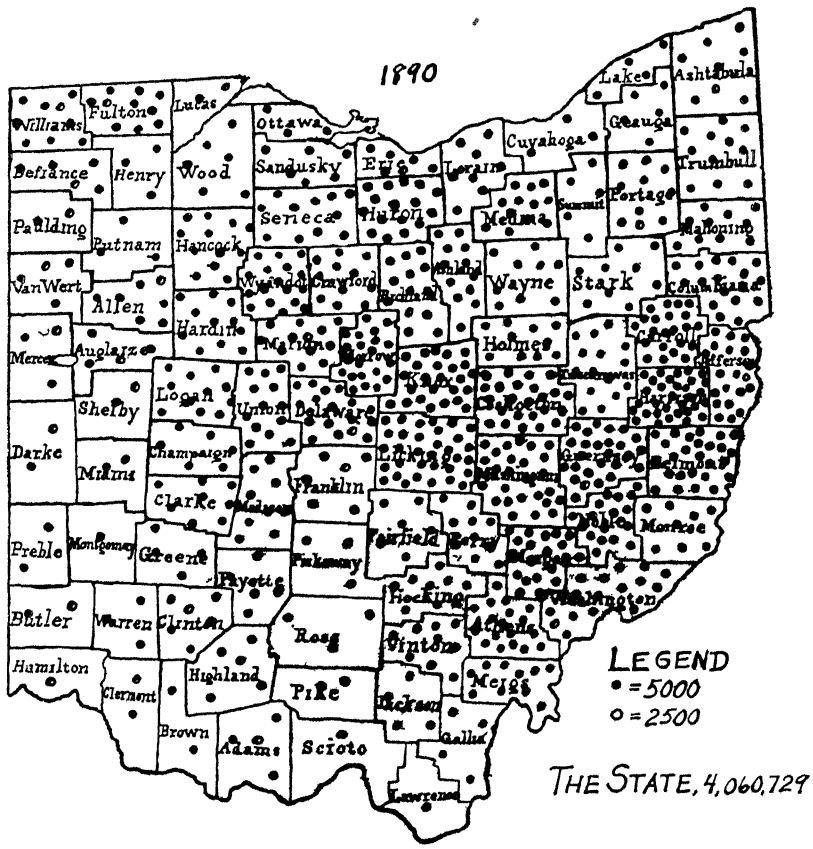
From 1900 to 1910 there was a slight increase in the number of sheep for the State as a whole. Nearly all of this increase, however, had taken place in a stretch ranging diagonally across the State from Carroll, Harrison, Guernsey and Noble Counties, northwest to Logan, Hardin, Hancock and Seneca. Twenty-two counties here show a total increase of approximately 350,000 sheep, and have nearly 70 percent of all the sheep in the State. In the dairy region of the northeast there was a marked and uniform decrease.

Improvement of sheep.—Before 1850 not much attention had been given to the improvement in quality of sheep in Ohio. There had been several flocks of fine wool sheep in the State previous to

SHEEP—1880

that time but misfortune and the fluctuating price of fine wool had discouraged the owners until in 1850 Klippart reported "that 1850 found us with scarcely a decent flock of sheep in the State." The Saxony blood which had at one time been common in the better flocks of Ohio was not given up until during the 'fifties when the movement for Vermont Merinos developed. By 1860 the use of Saxony blood had practically ceased and the Merinos had become established as the favorite breed. The decade of the Civil War saw a great improvement in Ohio sheep. A Portage County writer states in 1862 "there has been sold in this county within 1 year some two hundred and fifty bucks (Merino) from Vermont." Such

SHEEP—1890



was the demand for Merinos. In 1870 fully 90 percent of the sheep in Ohio were said to be of Merino stock. The English mutton breeds had been introduced in the State previous to 1850. In that year it was reported from various sections of the State, especially the west, that a tide was settling in for long-wool sheep. For a time, however, all gave way to the Vermont Merino. During the period of 1870 to 1890 there appeared in Ohio for the first time a general movement towards mutton sheep. The movement did not gain headway until after 1880, but from that date on its advance was rapid, there being a tendency to give more attention to medium-wool mutton sheep and lamb feeding. A change in the relative

SHEEP—1900

market prices received for fine and medium wool has doubtless hastened this transition. On the Boston market during the 'fifties the January price paid for fine wool averaged 49.5 cents a pound; in the 'sixties the average was 47.2 cents in gold. On the same market for the same periods medium wool sold for an average of 42.9 cents a pound during both decades. During the 'eighties the average prices were 38.8 cents for fine wool and 41.3 cents for medium wool. Since that time medium wool has brought more upon the market than fine wool. In 1911 the State Board of Agriculture reported the long wool breeds to exceed the Merinos in number.

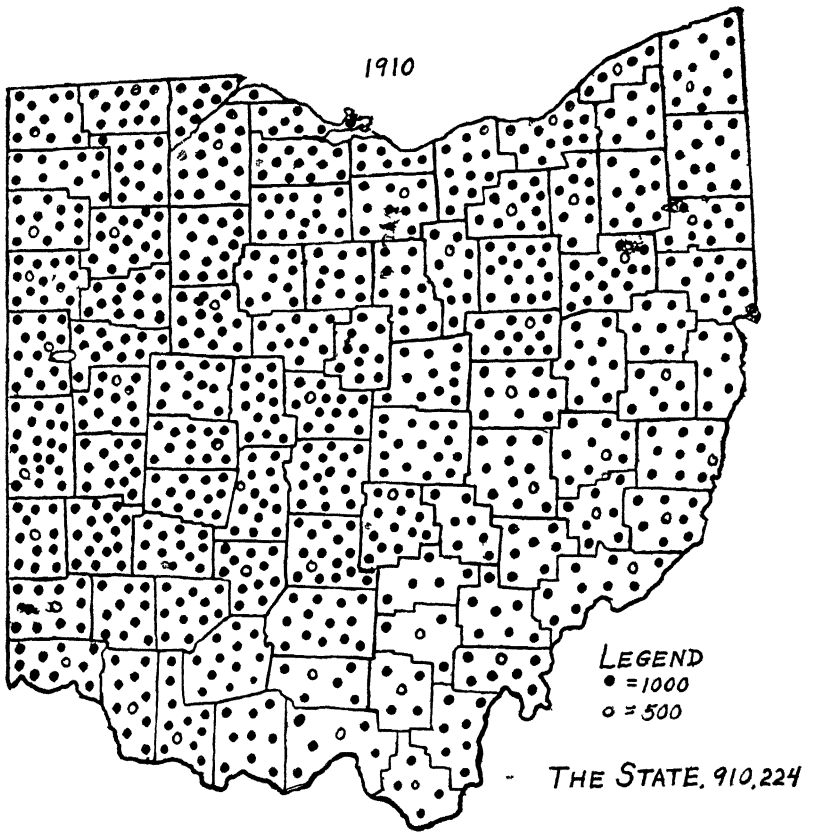
SHEEP—1910

HORSES

Year	Number
1850	463,397
1860	625,346
1870	609,722
1880	736,478
1890	880,677
1900	878,205
1910	910,224

Horses are uniformly distributed over the State. The above figures are for horses on farms, including colts. Putnam, Madison, Van Wert, Darke, Mercer and Union Counties in the order named had the largest number of growing colts in 1910. There were also 22,850 mules in the State in 1910.

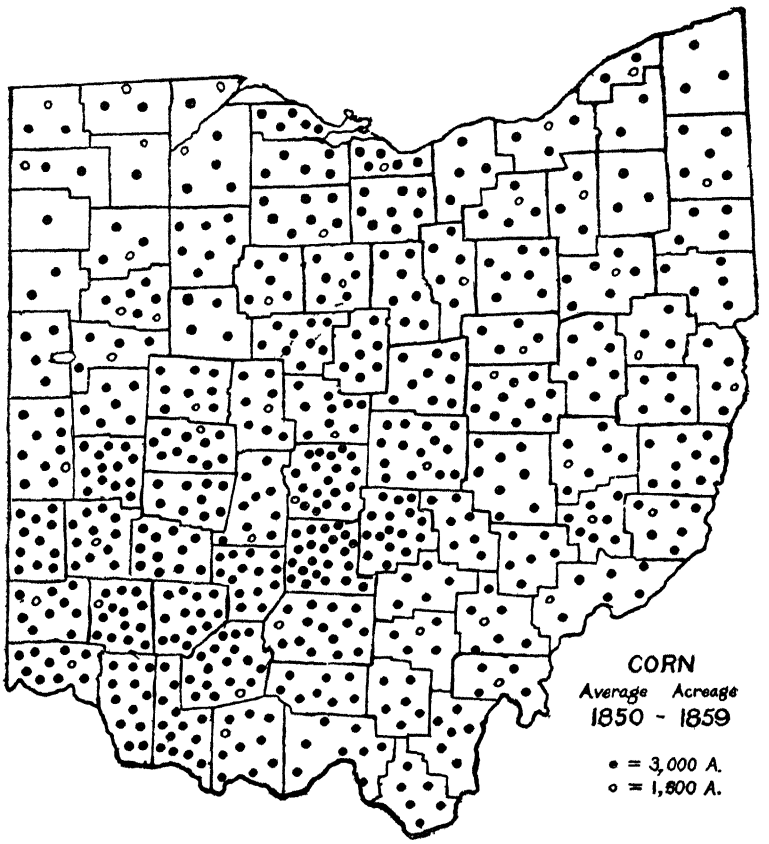
HORSES—1910



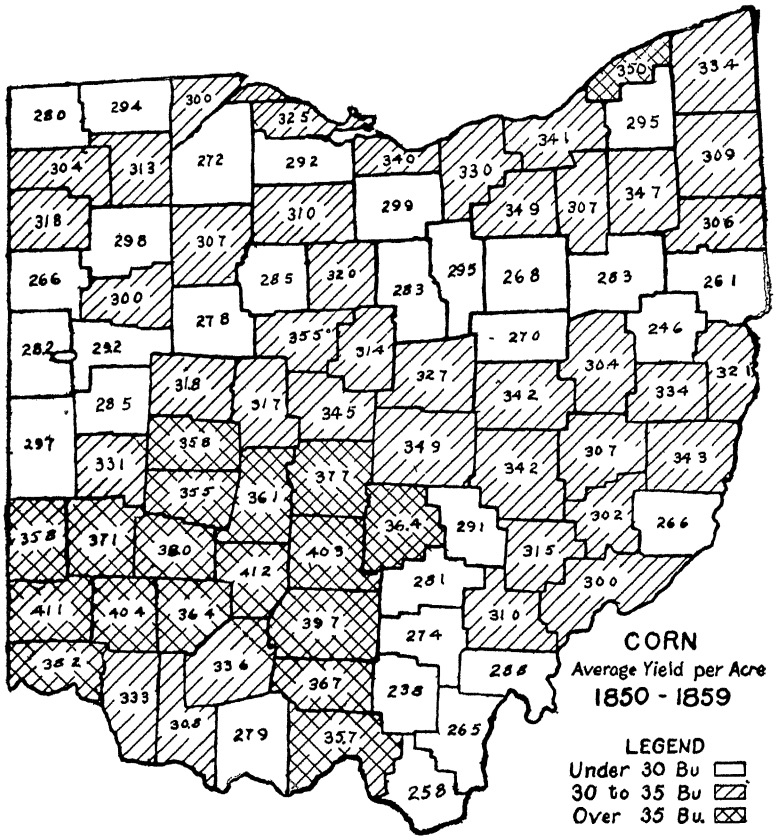
DEVELOPMENT OF FARM CROPS IN OHIO

CORN

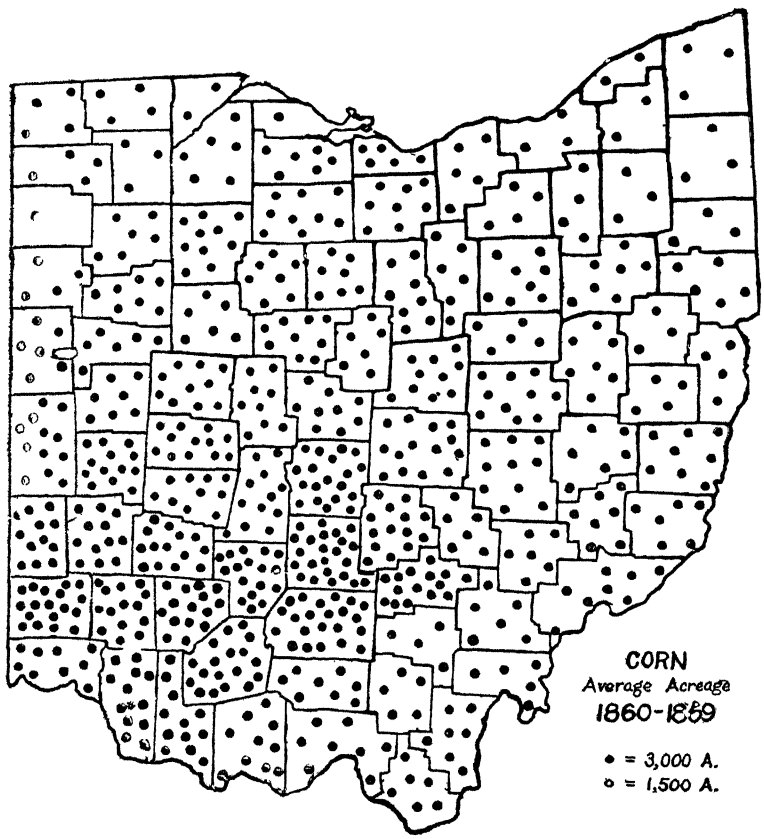
	Average area	Average yield per acre
	Acres	Bushels
1850-59	1,967,160	33.13
1860-69	2,152,117	32.25
1870-79	2,733,695	36.90
1880-89	2,698,140	33.86
1890-99	2,861,653	34.30
1900-09	3,028,294	36.56



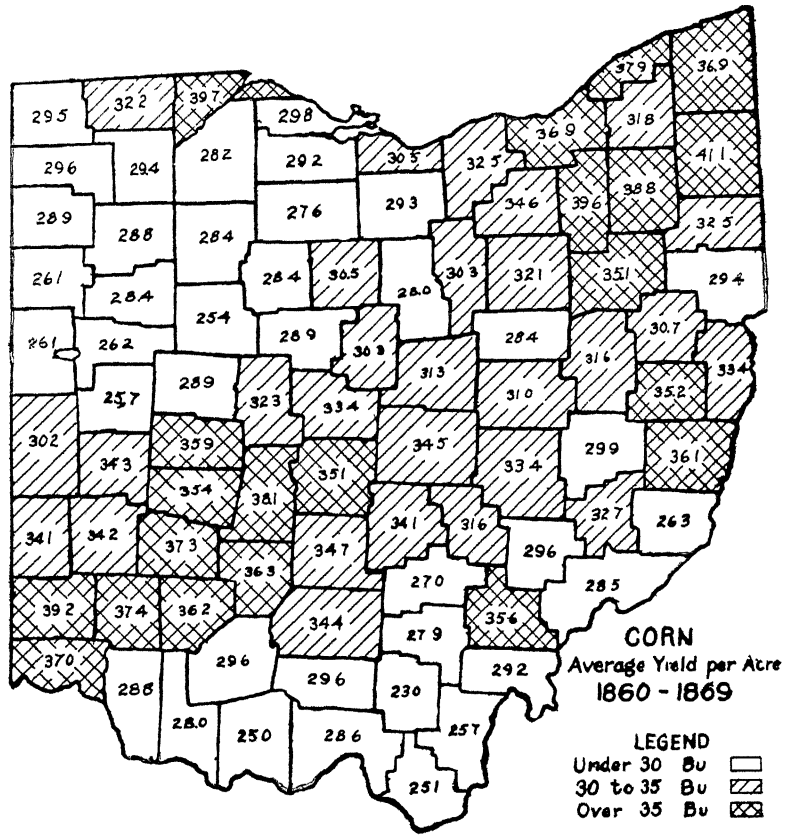
Ohio first in 1850.—In 1850 Ohio ranked first among the states in corn production. There was an average area of nearly 2,000,000 acres of corn raised in the State during the following decade. The regions of the Miami and Scioto River Valleys had long been famed for their large acreage and yields of corn. Franklin, Pickaway and Ross Counties led in the acreage of corn raised, further west in



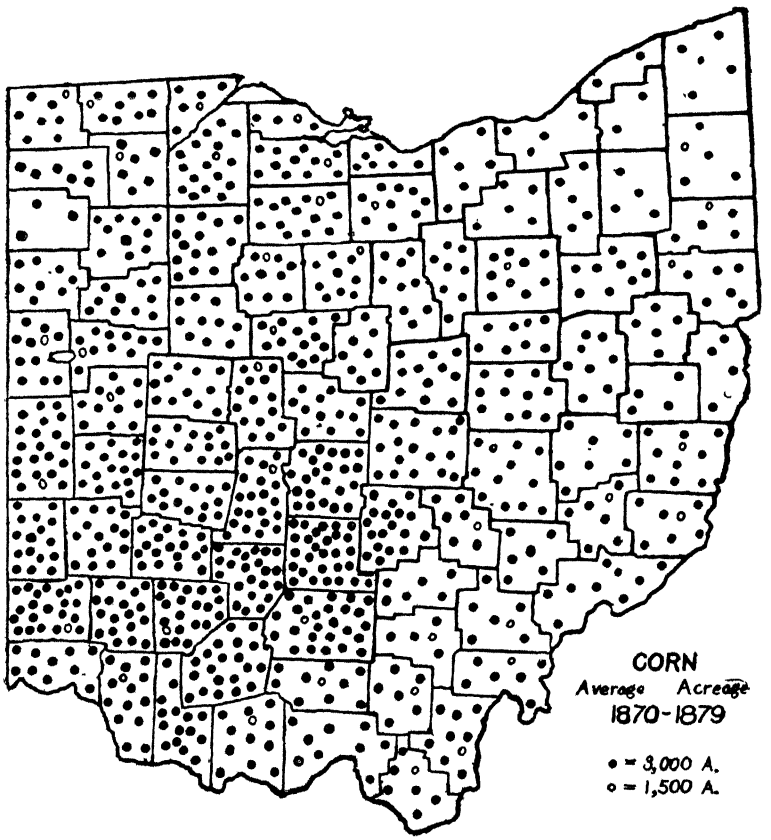
Miami, Darke and Preble Counties a large area which was later to be put in corn was as yet undeveloped land or in pasture. On the raw, undrained land of the northwestern counties corn production was decidedly uncertain. There was a larger corn acreage in the counties of southeastern Ohio than in those of northwestern Ohio.



While wheat was considered the staple crop by farmers on the hilly lands of eastern Ohio, corn was the great staple among the farmers who cultivated the alluvial soils. It was said in 1841 that some of the bottom lands of the Scioto had been cultivated in corn for 40 years without rotation or rest, and that they still produced from 50 to 70 bushels to the acre. While a few farmers were producing corn in rotation it was a common practice for corn to follow

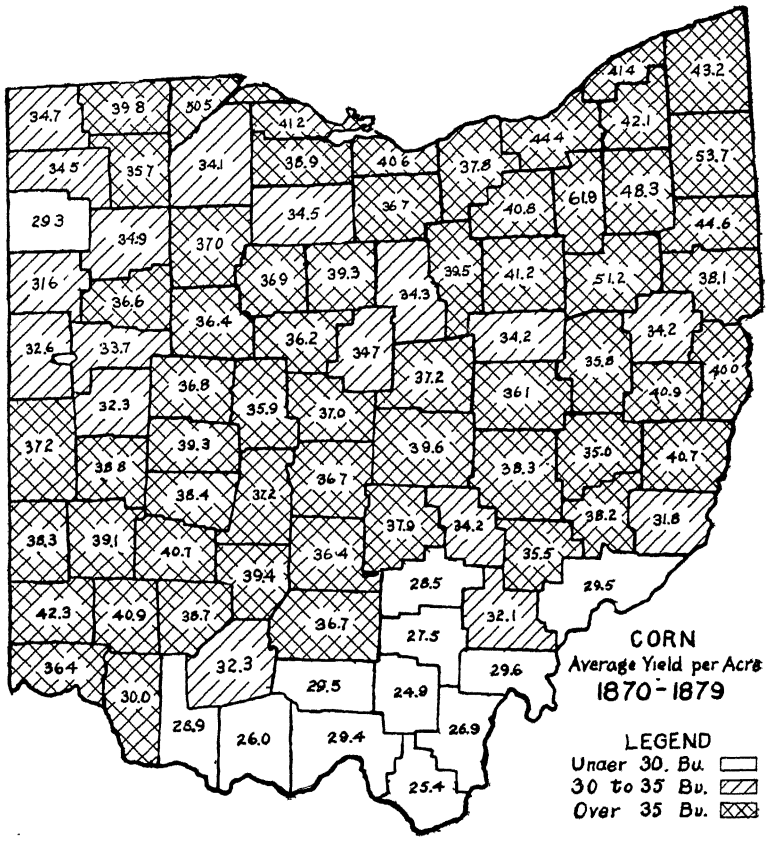


corn on the same ground year after year. On the hill farms of eastern Ohio the yield of corn was less than on the bottom lands and the cost of production greater. On the farms of eastern Ohio it was a usual practice among wheat farmers to grow corn or oats on a clover sod to be succeeded by wheat; others followed the corn crop with a summer fallow before seeding to wheat.



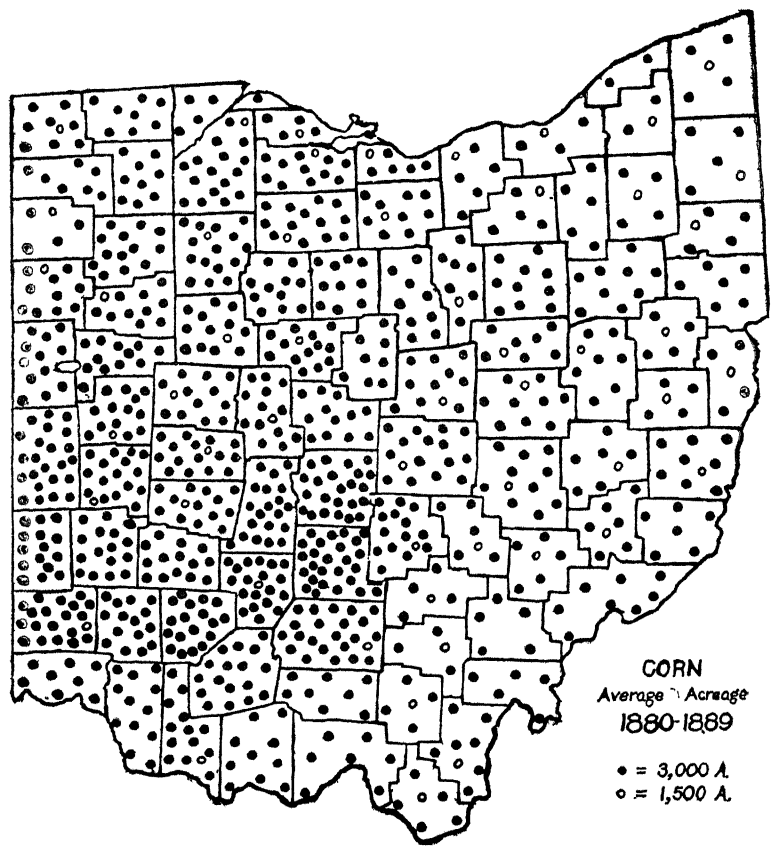
There was little change in the total corn area during the decade of the Civil War; in the western and northern counties there was a tendency for the area of corn to increase, but in many of the counties of the southeast a tendency for it to decrease.

The decade from 1870 to 1879 showed a marked increase in corn area over that of the preceding decade. Many causes contributed to this increase. The disturbed conditions due to the Civil War had

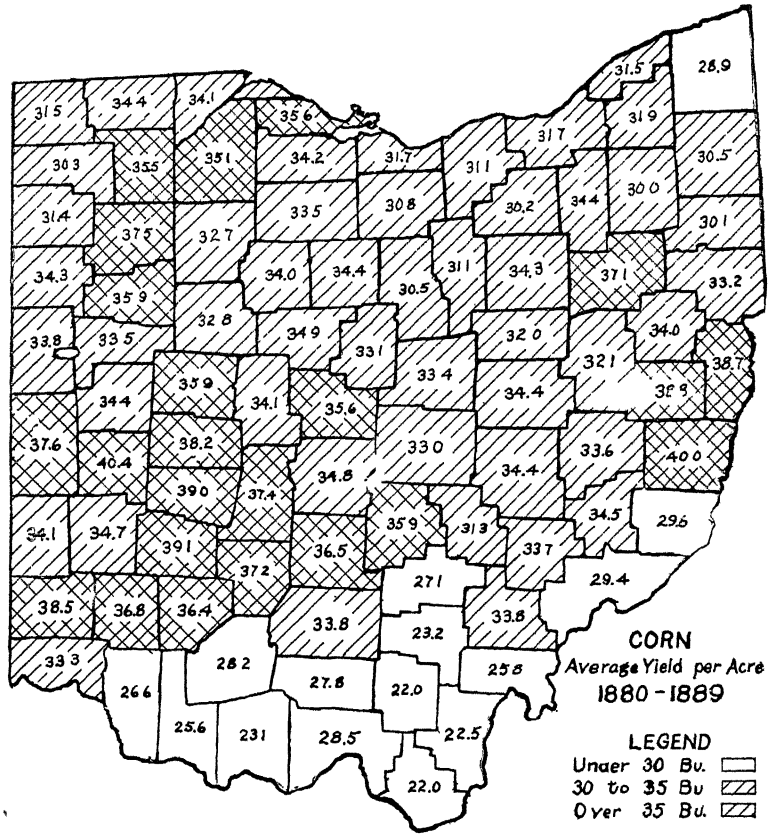


subsided, yields were exceptionally good, machinery for planting and cultivating corn had been greatly improved and during this decade was generally adopted. While the corn area in every county of the State increased, a large part of the total increase for the State was in the western half.

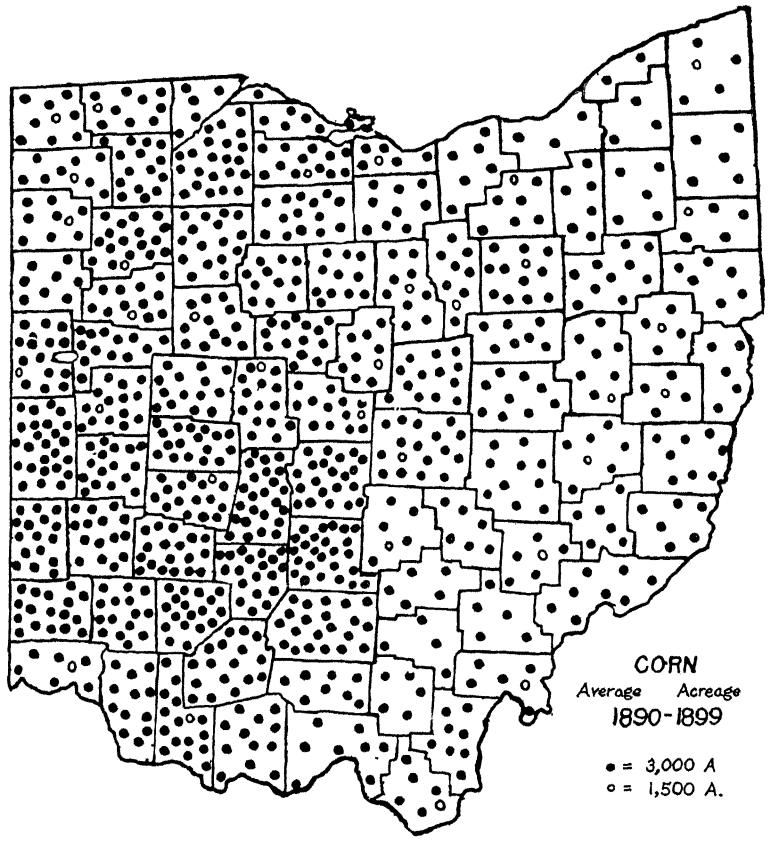
From the decade of the 'seventies to the middle of the 'nineties there was little change in the corn acreage. During the 'eighties



the corn area for the State as a whole decreased. In the southern and southeastern counties there was a uniform tendency for the area to decrease. All the counties lying south of Columbiana, Franklin and Darke showed a decrease in corn area. Those of northern and more especially of northwestern Ohio showed an increase. About the middle of the 'nineties the acreage of corn con-

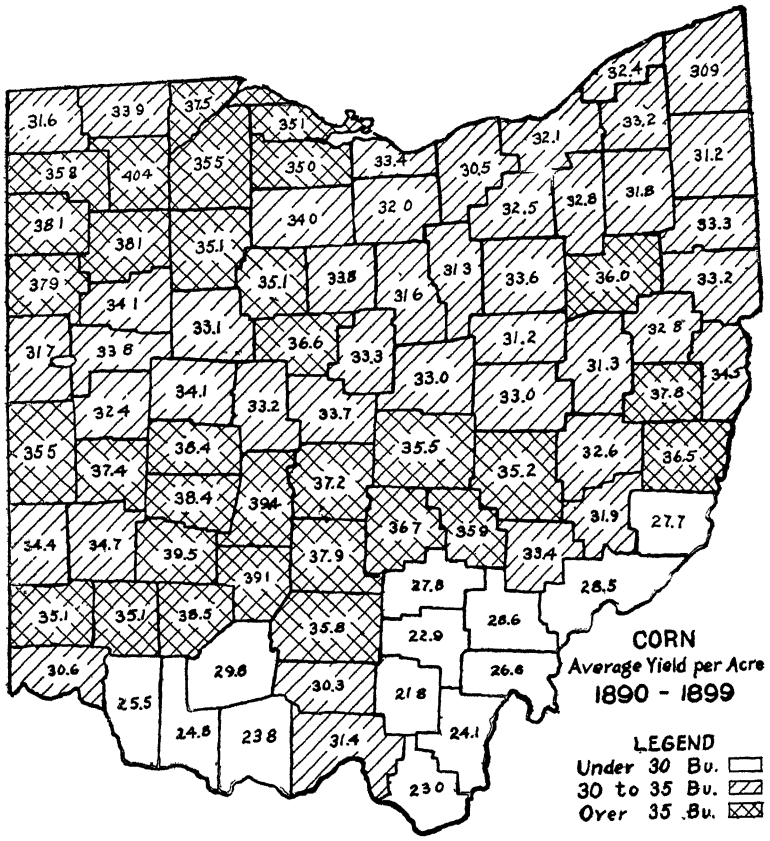


siderably increased. The State as a whole showed an average increase of nearly 200,000 acres over that of the preceding decade. Six counties in the Miami Valley showed a slight decrease in area as did also four counties in the Scioto Valley and twelve in the east-central part of the State. Many of these were among the leading corn-growing counties. The increased area for the State was due

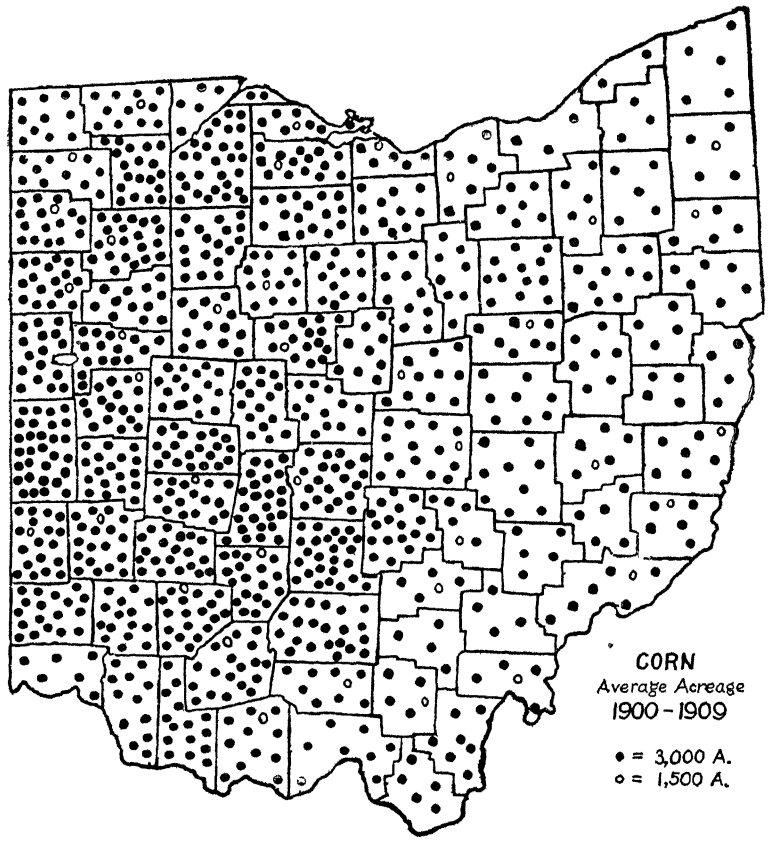


largely to the rapid extension of area in the northwestern counties. Here drainage was greatly increasing the certainty of a corn crop.

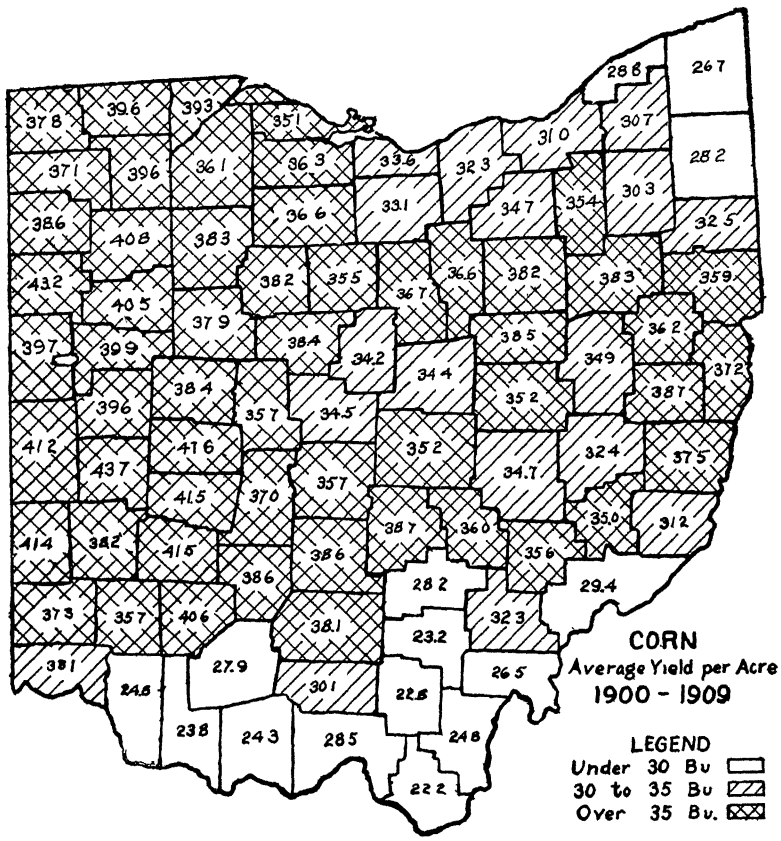
The large acreage of the later years of the 'nineties was maintained during the first decade of the Twentieth Century. In western Ohio every county with the exception of the Ohio River counties showed an increase in area over the precedng decade. Thirty-five counties in eastern Ohio, however, showed a decrease. In the counties of the extreme southeast the decrease was marked.



Considering the period from 1850-59 to 1900-09 there has been a decline in corn acreage in seventeen counties, all except one (Hamilton) of which are in southeastern Ohio. From 1870-79 to 1900-09 there was an increase of more than 10 percent in the corn area. Thirty-five counties, however, show a decrease in acreage during the period. Twenty-nine of these were southeastern Ohio counties lying south and east of Mahoning, Franklin and Scioto. The other six were in southwestern Ohio.

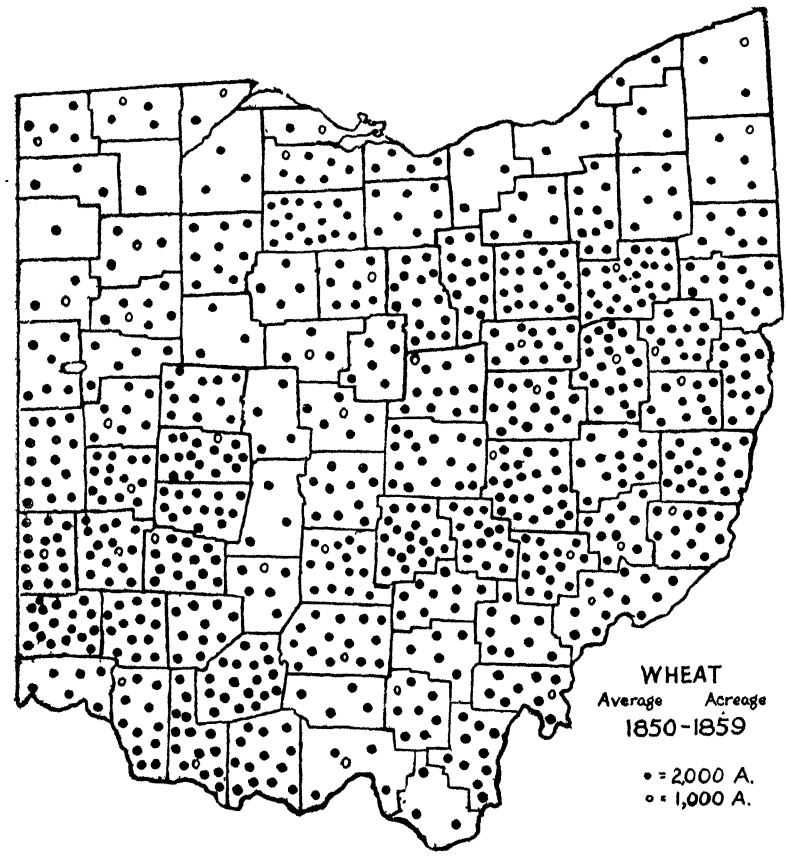


The average corn yield for the decade 1870-79 was high, due to a succession of good years. Yields for the decade of the 'eighties were normal and since that time there has been a gradual increase for the State as a whole. The limestone soils of the western half of the State have given the highest corn yields.

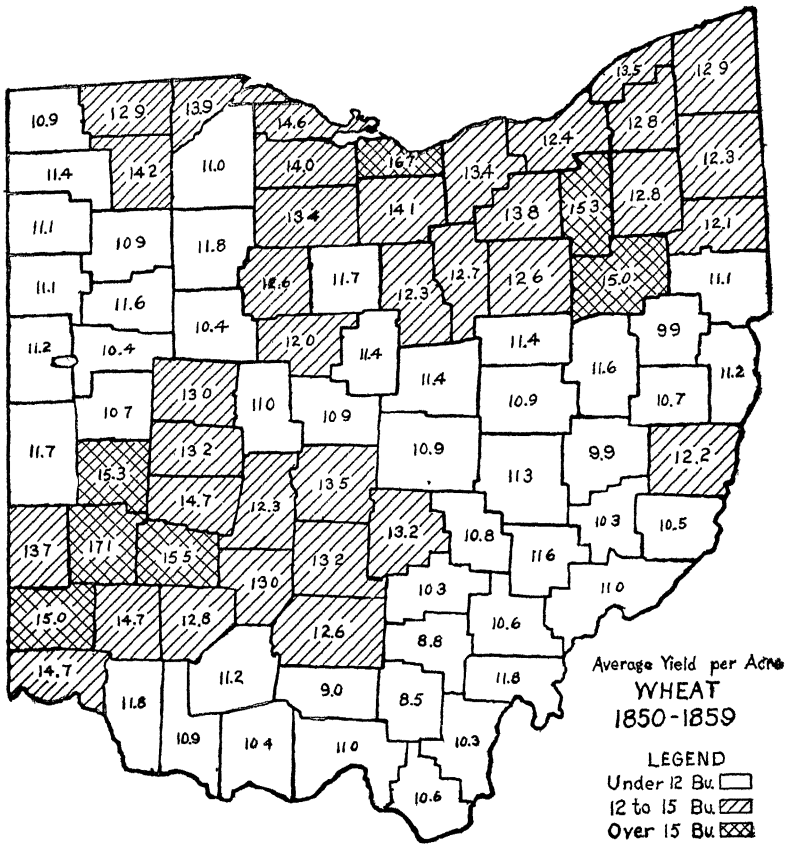


WHEAT

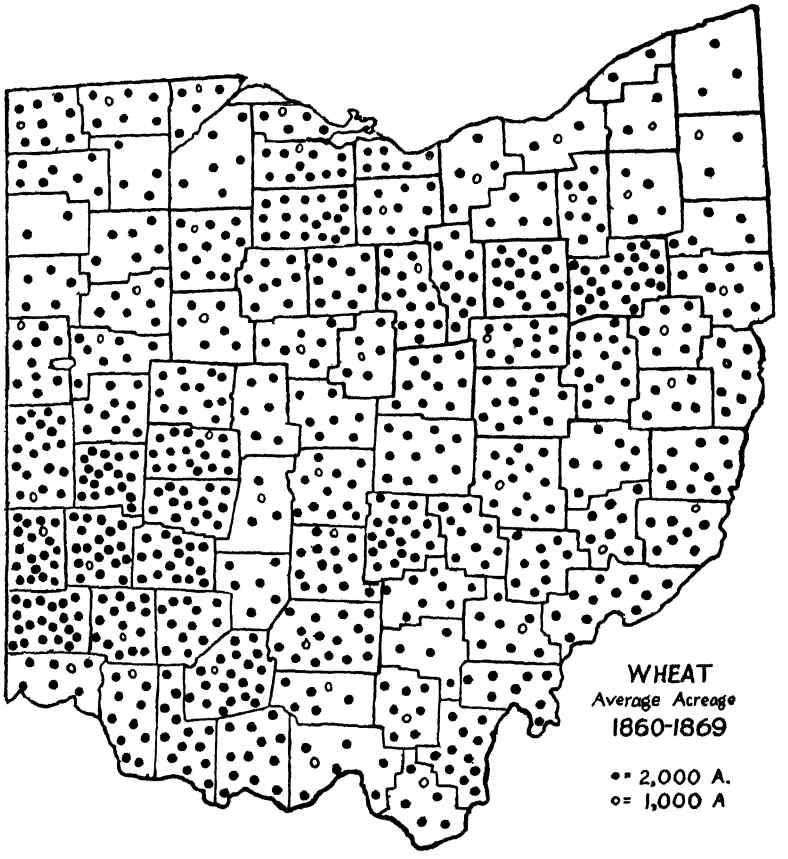
	Average area Acres	Average yield per acre Bushels
1850-59	1,625,402	12.21
1860-69	1,645,321	11.21
1870-79	1,822,546	13.26
1880-89	2,532,681	13.70
1890-99	2,520,402	14.63
1900-09	1,977,248	14.60



"Old wheat belt."—Long previous to the 'fifties the so-called "back bone" counties of Ohio, especially the counties of Stark, Wayne, Holmes, Ashland and Richland, had become widely known as the leading wheat section of Ohio and the West. A territory comprising a group of counties extending from here south to Belmont and Morgan Counties was called the "old wheat belt" of the State to distinguish it from the new center of wheat production which was rapidly developing in the southwestern corn-growing counties. During the decade of the 'fifties the area of wheat in the southeastern quarter of the State was nearly equal to that in the southwestern quarter.

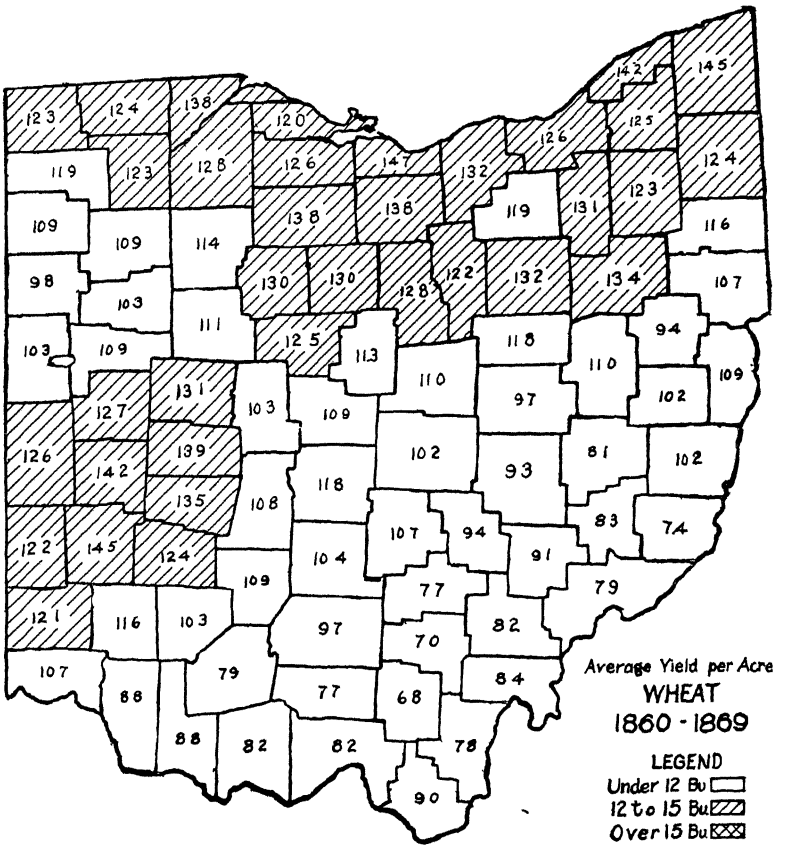


In the old wheat belt the best and most certain land for wheat was said to be the high, rolling uplands formerly covered with a thick growth of oak timber. In favorable seasons the valley lands produced higher yields per acre but the crop was uncertain. It was the common practice on these upland oak lands to sow wheat after a naked summer fallow. The system used by some of the better farmers is thus described: "The summer fallow is usually made on a 2-year-old clover sod. It is rarely broken before the first of July, after which it is allowed to remain almost untouched until the first

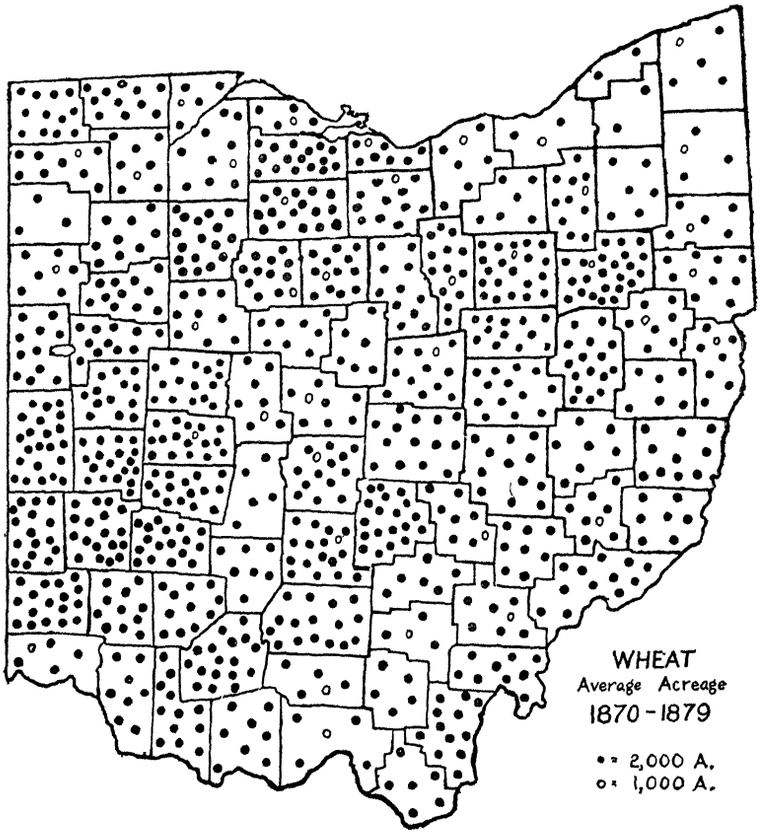


week of September, when it is again plowed and sown for wheat." There was a tendency for the period of summer fallow to be shortened. In some instances wheat followed oats. With many on the newly-cleared lands wheat follows wheat for a succession of years, by simply allowing an occasional crop of corn to intervene.

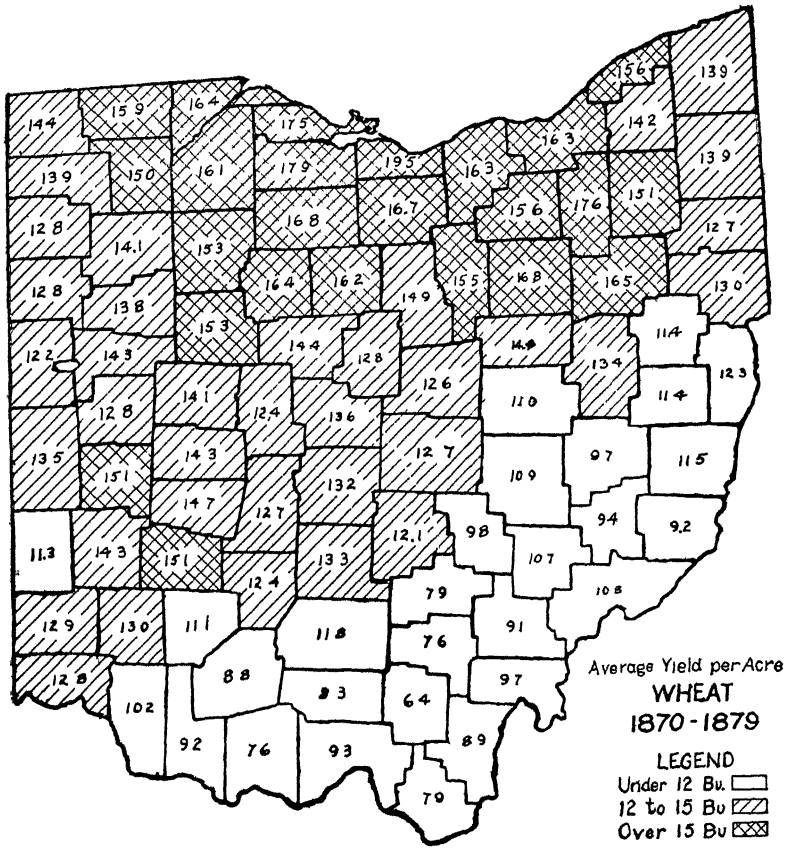
Discouraging conditions from 1853 to 1868.—The period of 1853 to 1868 were years of discouraging, low yields to Ohio wheat farmers. The crop of 1854 was almost a failure due to drought, the midge and winter-killing, while the crop of 1859 suffered severely



from a late June frost which caused a total failure in many of the northern counties. The good price received for the crop of 1854 somewhat counteracted the low yield, but by 1858 Ohio farmers were asking "Shall we continue the culture of wheat or shall we abandon it, and if it is abandoned what shall be substituted for it?" The crops of from 1864 to 1866 were extremely poor, that of the latter year averaging only 4.5 bushels to the acre for the State as a whole. Were it not for the good prices of the Civil War period and the general introduction of labor-saving machinery there would have been a material reduction of acreage all over the State.

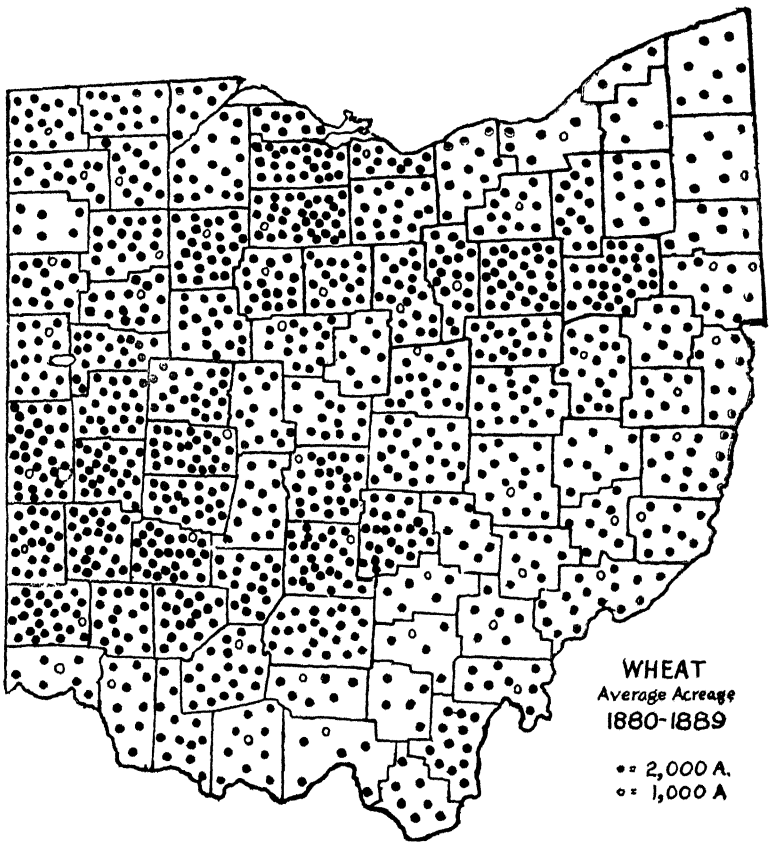


The decade of the 'sixties saw little change in the total acreage of wheat in the State. There was a considerable change in the distribution of this acreage, however. In the western half of the State which was being rapidly developed and new land taken into cultivation the average wheat area increased more than 135,000 acres; in the eastern counties there was a corresponding decrease, due it was said to the succession of low yields. Continuous cropping of the lands in the older counties of eastern Ohio had greatly reduced their original fertility, resulting in a marked decline in the wheat yield of the old wheat belt.

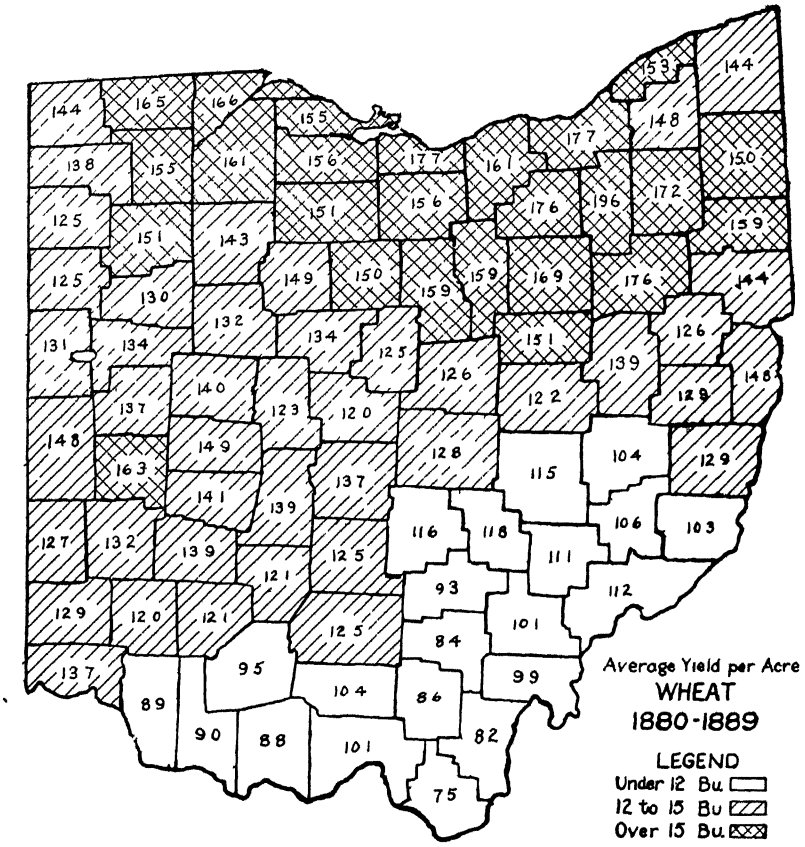


During the decade of the 'seventies yields averaged better. The southern tiers of counties, however, from Belmont and Monroe on the east to the Indiana line on the west showed a continued low yield and decline in the area planted.

Better methods bring increased production.—During the decade of the 'eighties and 'nineties wheat production in Ohio was at its height. During the 'eighties all counties with the exception of three (Hocking, Athens and Meigs) showed an increase of wheat area over the preceding decade. The exceptionally good yields of

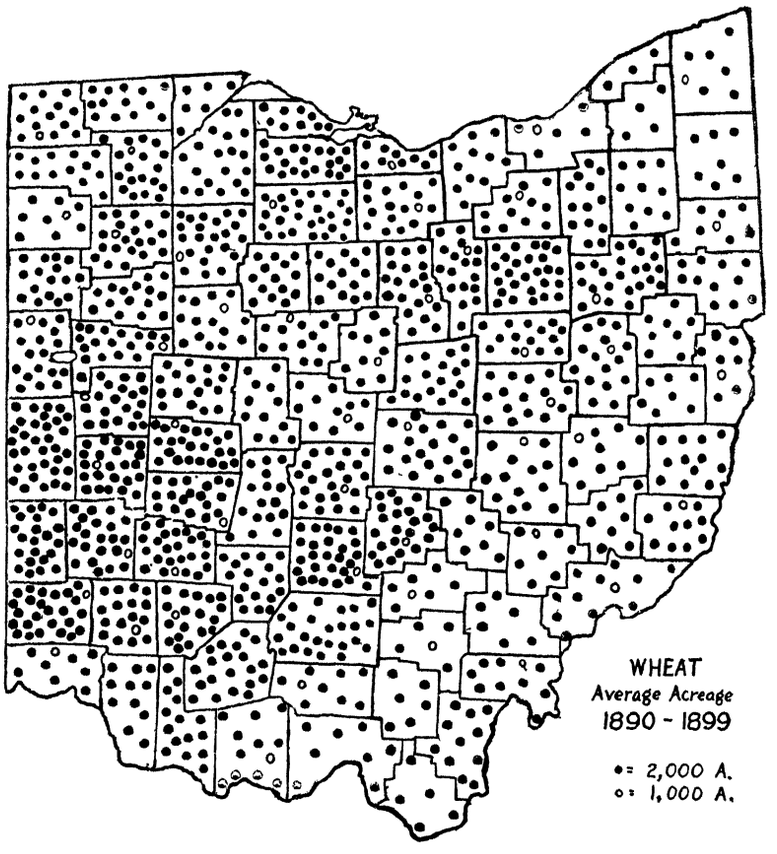


the years from 1877 to 1880 did much to stimulate this increased planting. The development and introduction of the binder was a further cause. Better tillage methods, the use of higher-yielding varieties, and the more practical use of fertilizer were doubtless other contributing causes. Every county showed an increase in area planted. During the 'nineties there was not much change in the total area planted. Through the central part of the State there was a tendency for the area to decrease, in the extreme southern and in many of the northern counties a tendency to increase. Dur-

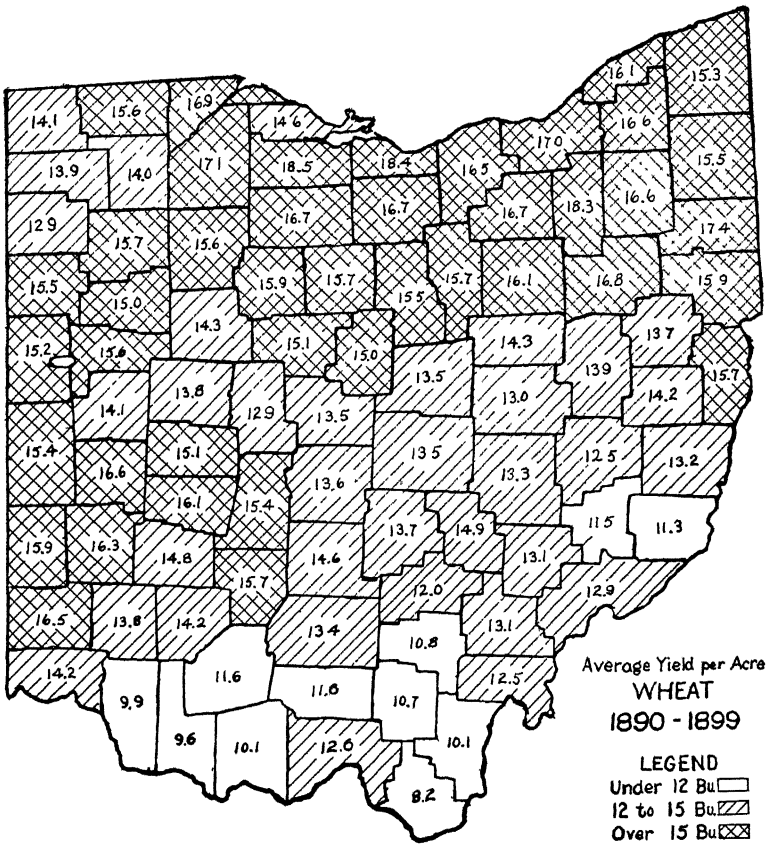


ing these two decades the price of wheat was low. From 1882 to 1903 the farm price of Ohio wheat did not once reach the dollar mark; from 1880 to 1889 it averaged 91 cents per bushel, from 1890 to 1899 it averaged only 71 cents per bushel. The prices of other farm products were proportionately low. Yields above average and the need of a cash income helped to maintain the area planted. In 1883, 1885, 1888, 1890 and 1896 the yields were low.

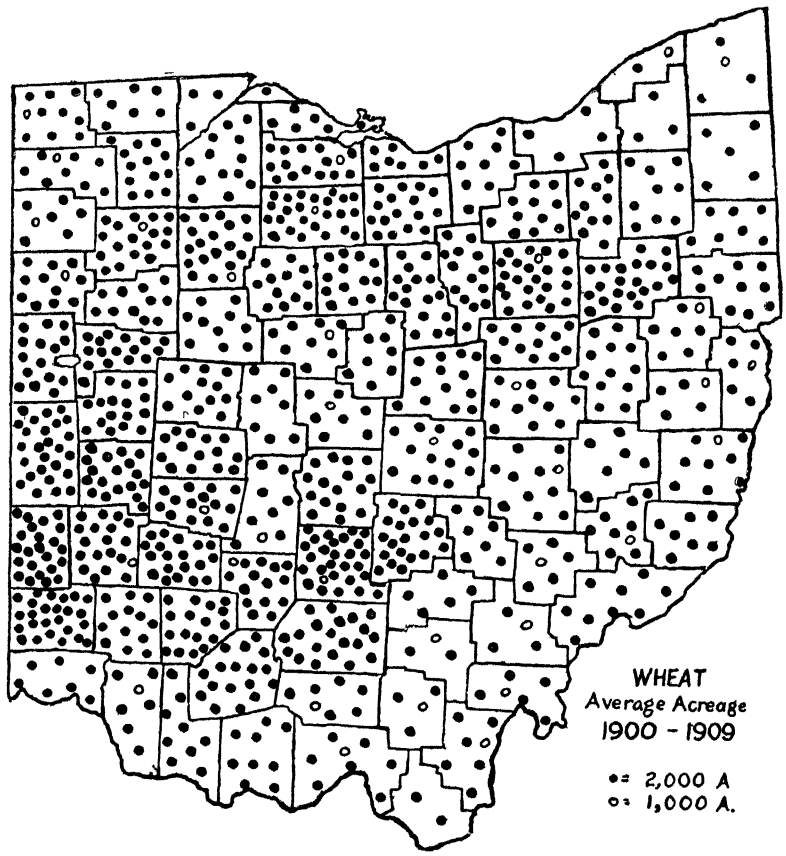
Following the large acreage and low prices of 1899 and the unusually low yields of 1900 there was a decided decrease in wheat acreage. This decline was general, every county showing a greatly decreased acreage during the following decade.



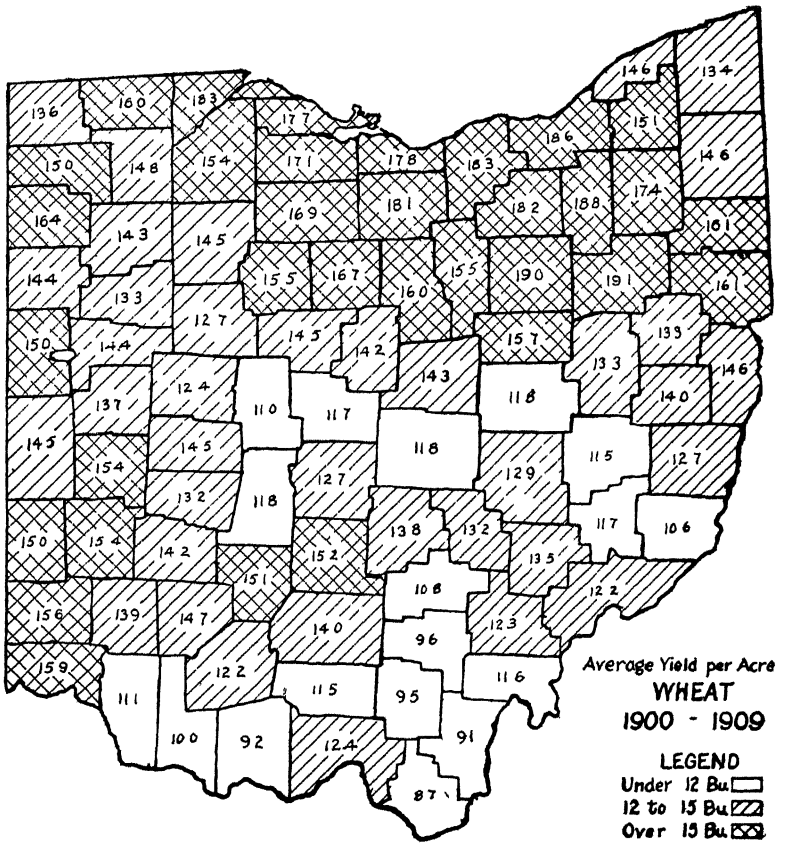
Comparing the periods 1850-59 and 1900-09 there has been a general increase in wheat area in all except the Ohio River counties and in twenty-one of the southeastern counties lying south of Columbiana and Holmes Counties. In these counties there has been a 40 percent decrease in wheat area. In Morgan County there was a decrease of 65 percent. This is also the region of lowest yields, and in many parts is not as well adapted as other regions of the State for using labor-saving machinery.



Darke, Preble, Miami, Montgomery and Green counties in the southwest now rank of equal importance as wheat-producing counties to Stark and Wayne in the old wheat belt. The production of wheat in the northwestern counties has increased with the development of that territory, Seneca and Hancock now ranking among the largest wheat-producing counties.

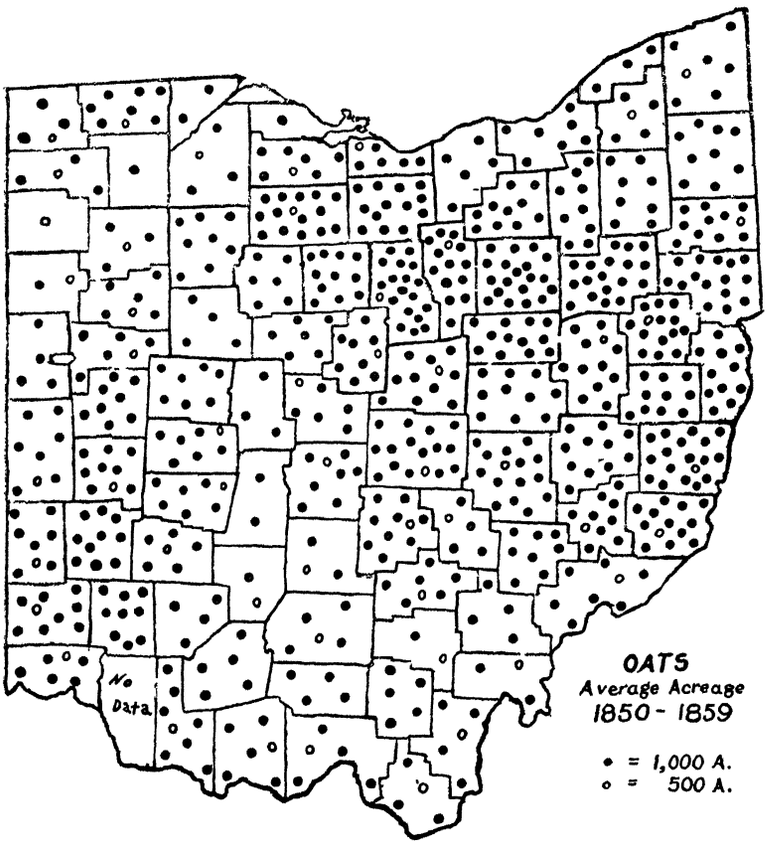


The decades from 1850 to 1870 were years of low yields. Since 1890 there has been little variation in average yield for the State. Since 1870 Stark, Wayne and Summit Counties have ranked among the counties having the highest yields. The Ohio River and southeastern counties have shown the lowest average yield.

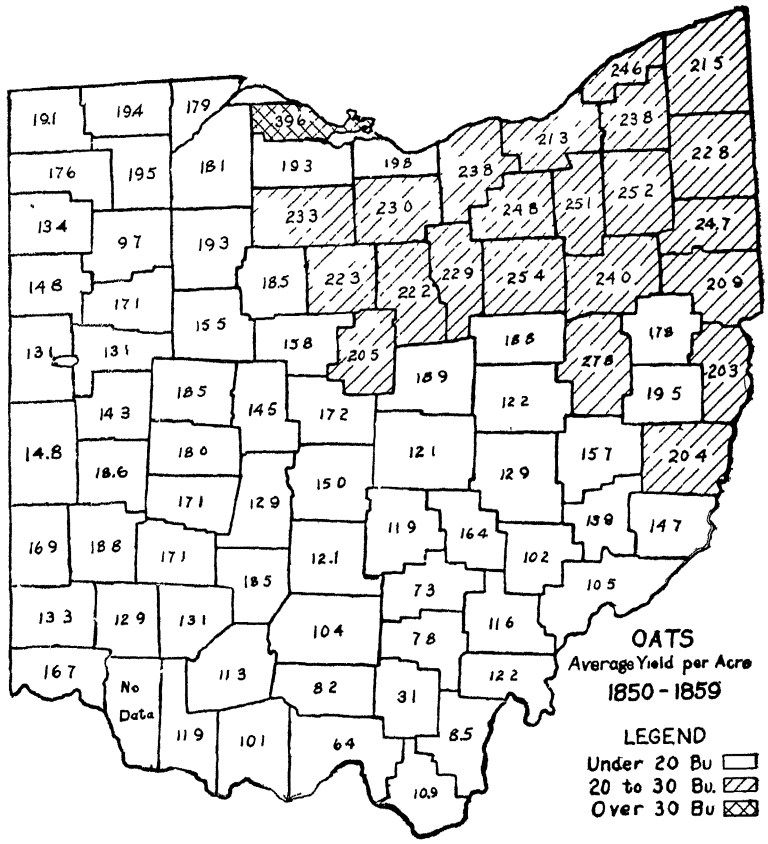


OATS

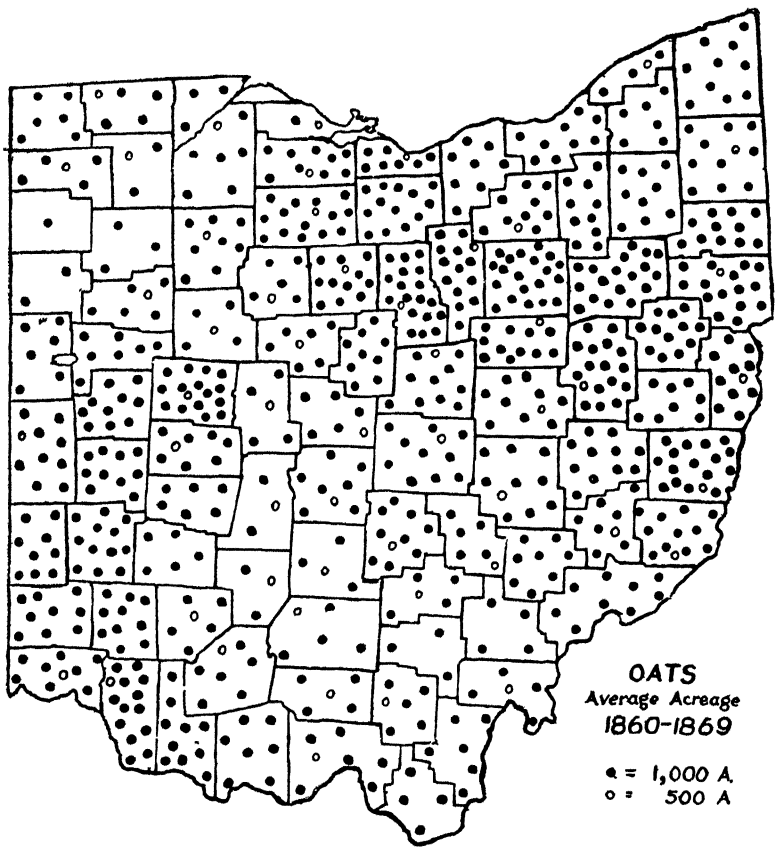
	Average area Acres	Average yield per acre Bushels
1850-59	637,067	17.88
1860-69	713,749	25.60
1870-79	917,177	27.73
1880-89	871,876	30.40
1890-99	993,226	29.13
1900-09	1,326,323	31.88



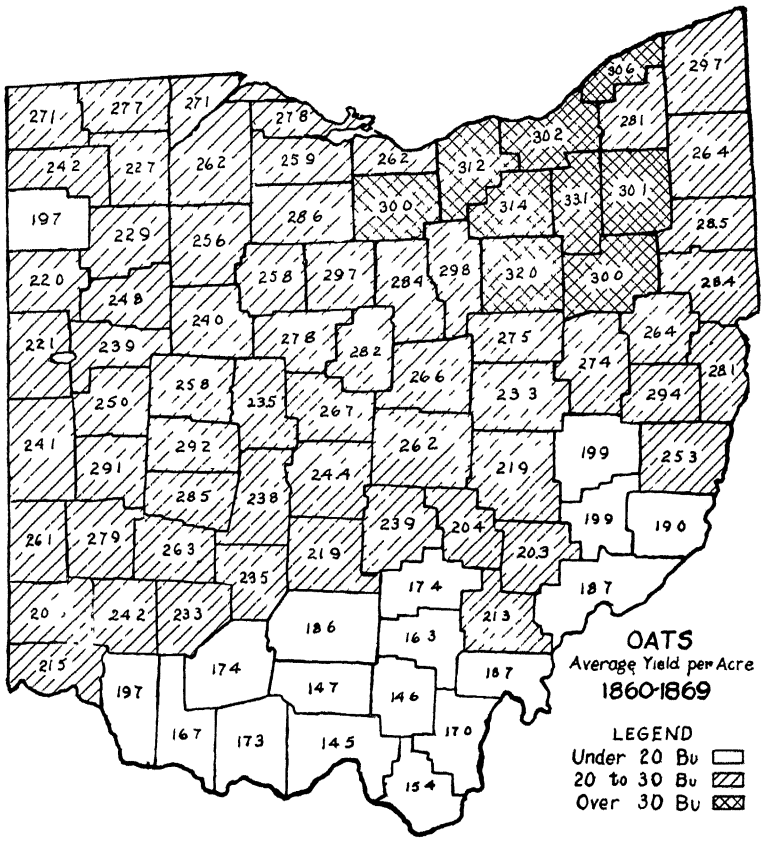
Oat average has increased.—The oats crop for the State since the decade 1850-1859 shows a larger proportionate increase in area grown than either wheat, corn, or hay. From 1850 to 1859 the oat area was 39 percent of the wheat area; from 1900 to 1909 it was 67 percent.



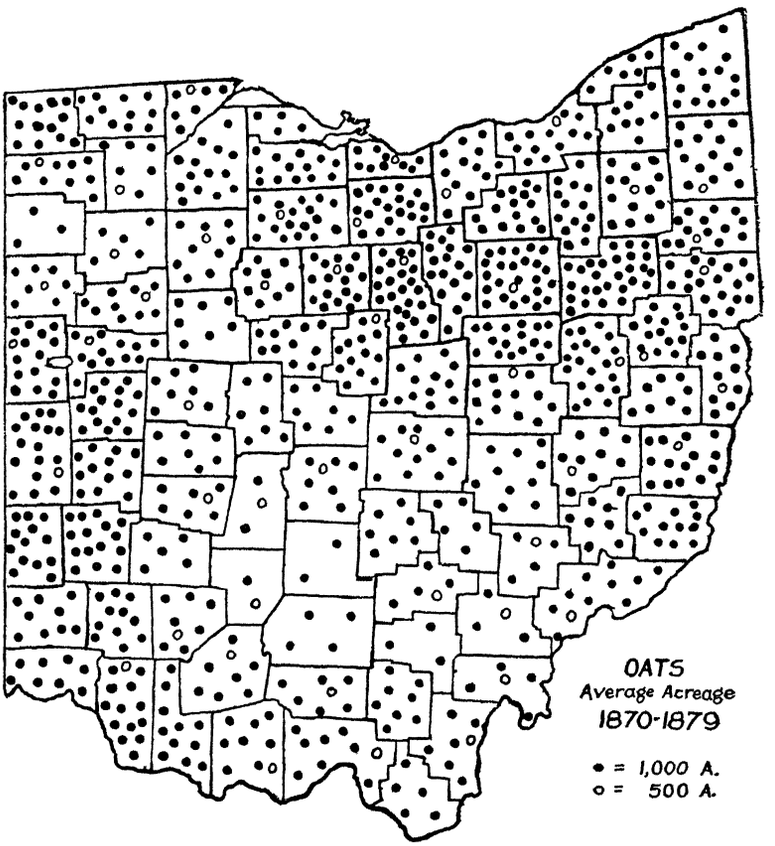
During the period from 1850 to 1870 the eastern half of the State produced the large portion of the total oat crop. The leading wheat-producing counties led also in the production of oats. In the "old wheat belt" oats were commonly included in the rotation.



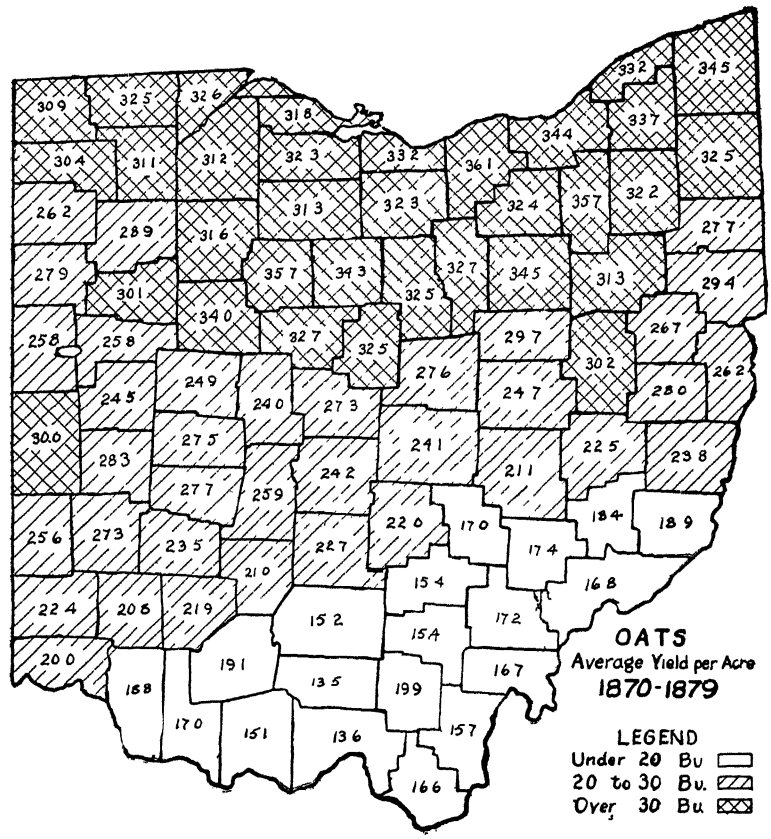
Northwestern Ohio was not yet prominent as an oat-producing section of the State. Wood and Paulding Counties which several decades later ranked first in acreage were among those counties having the lowest acreage from 1850 to 1860. There was little



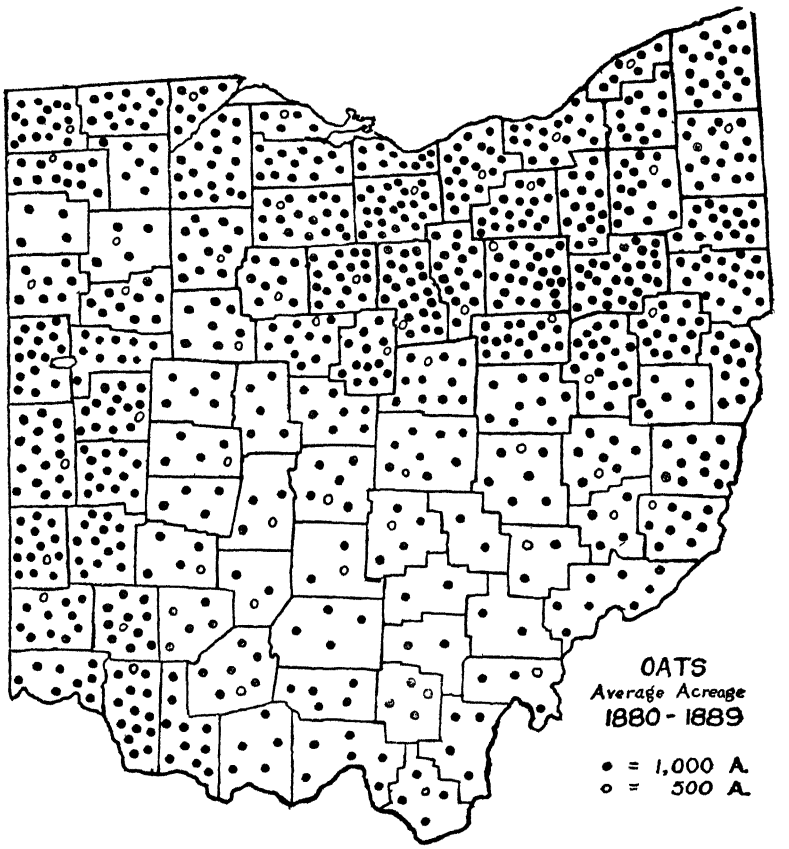
change in total acreage during this period; in many of the counties of the southeast there was a decrease in the oat area, this, however, was more than balanced by the increasing acreage in the northeast. A succession of poor crops during the 'fifties discouraged many in oat production.



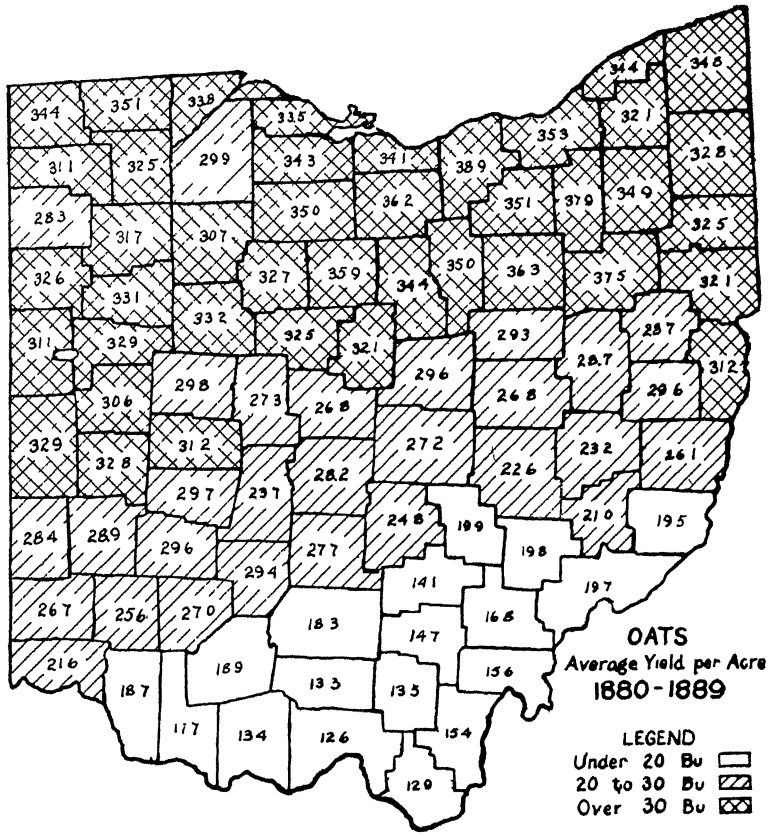
Introduction of machinery increases acreage.—Good crops together with more settled conditions and the increasing use of reaping machinery led to a material increase of area during the 'seventies. The greater part of this extension of area was in the



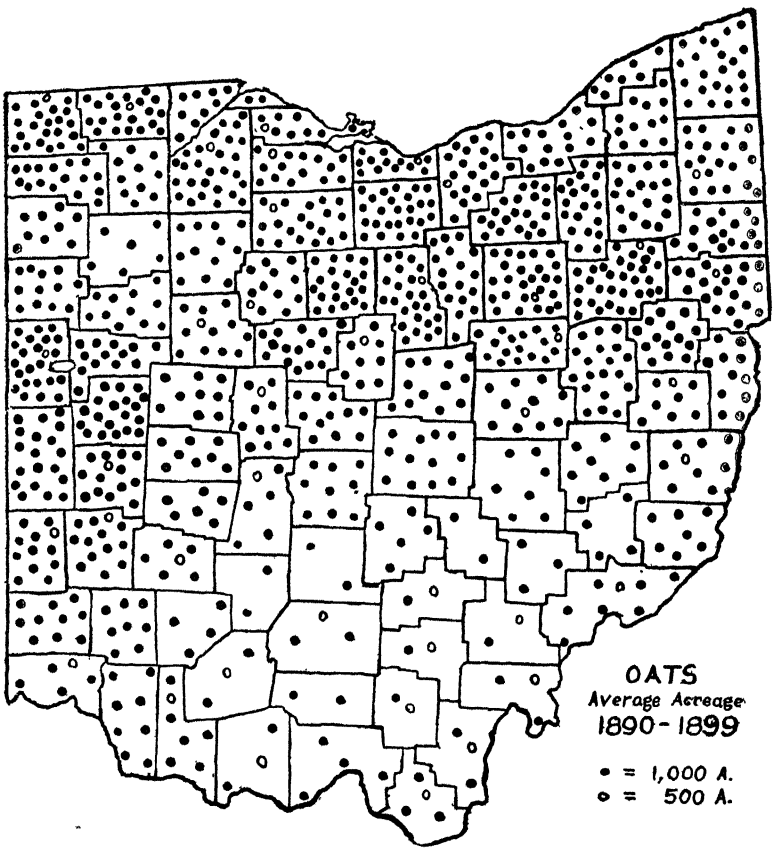
northeastern and northwestern counties. During the decade of the 'eighties there was practically no change in the acreage planted for the State as a whole. Nearly all the southern and central counties showed a tendency for the area of oats to decrease. In the northern



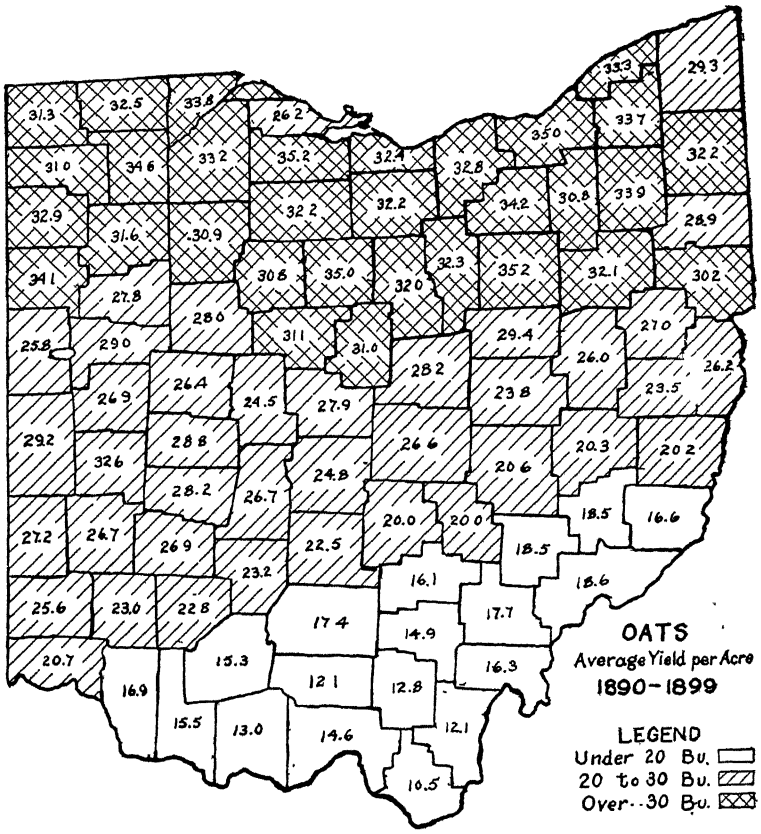
tiers of counties the acreage planted was increased. During the 'nineties the area in the southern one-third of the State decreased, after 1893 that in the north and central part increased.



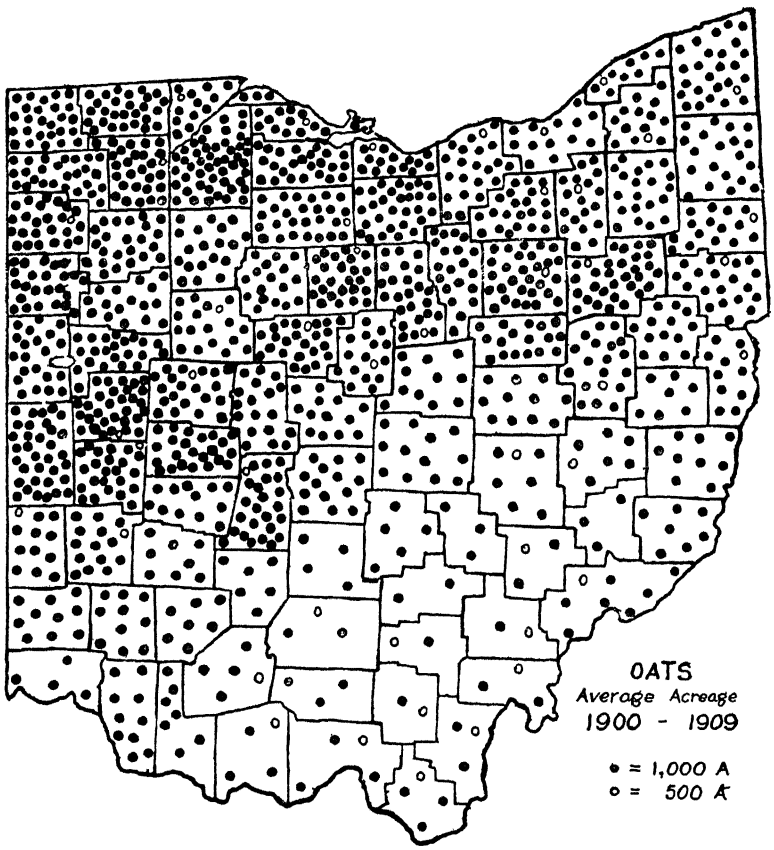
Since 1900 there has been a considerable increase in the acreage. In several counties of the southeast, however, the area continued to decrease, while the larger part of the increase has been in the western counties of the north and central part of the State.



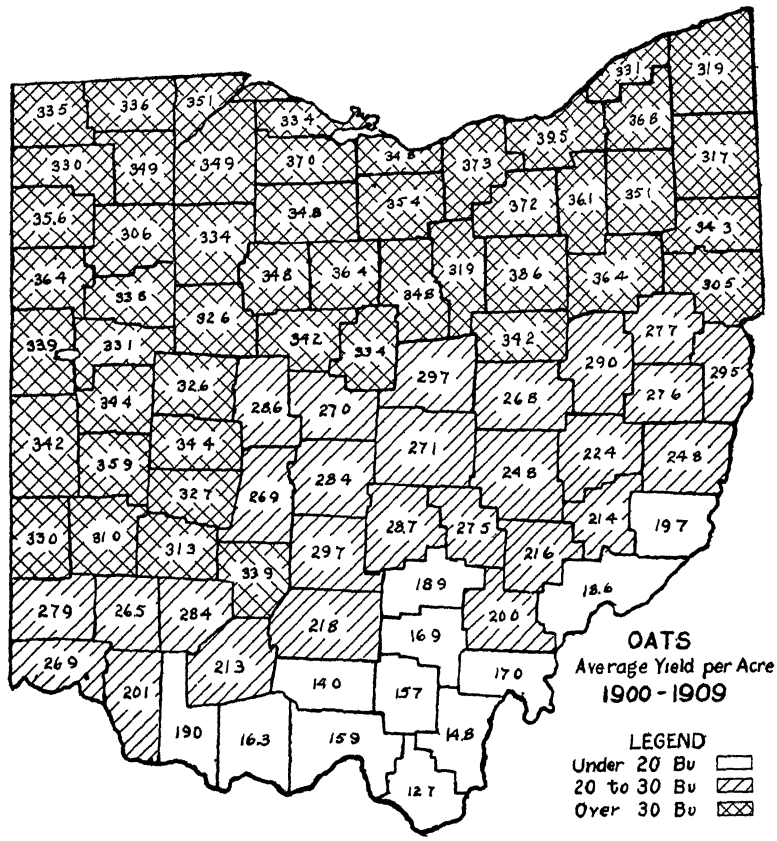
Comparing the years 1850-1859 with those of 1900-1909 shows a considerable change in the center of oats production. In the southeastern section there has been a reduction of acreage. In the



northern and west central and especially in the northwestern counties there has been an increase. While the Ohio River and southeastern counties have maintained the same yields per acre, there



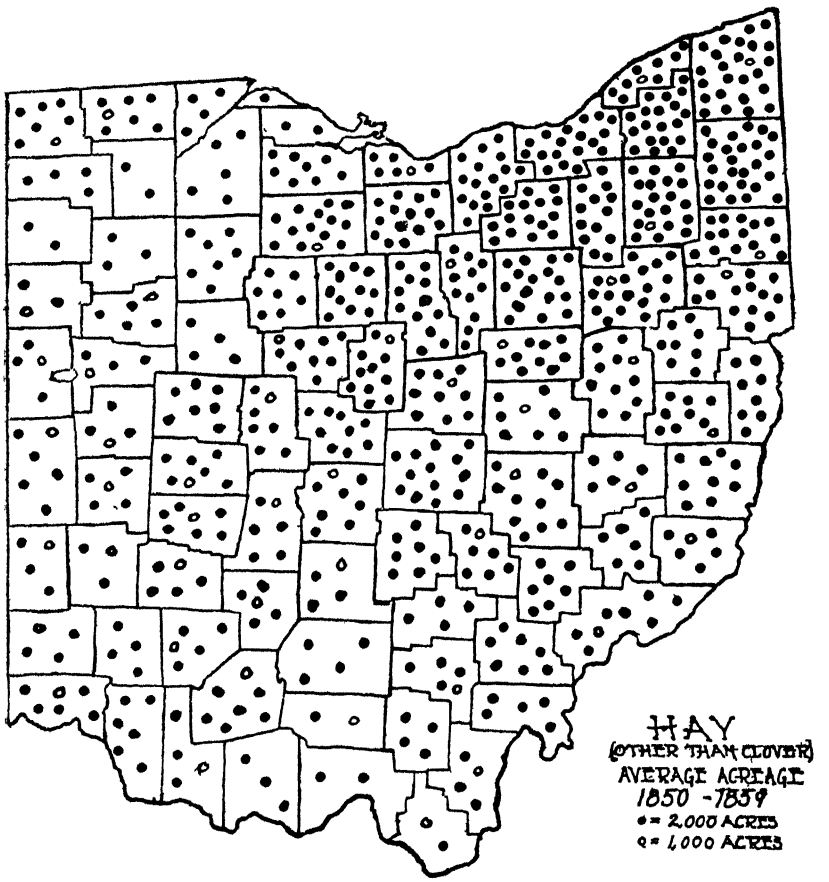
has been an increase in other sections, especially in the northwestern counties where better tillage has done much to improve the yields. The northern half of the State has the highest oat yields.



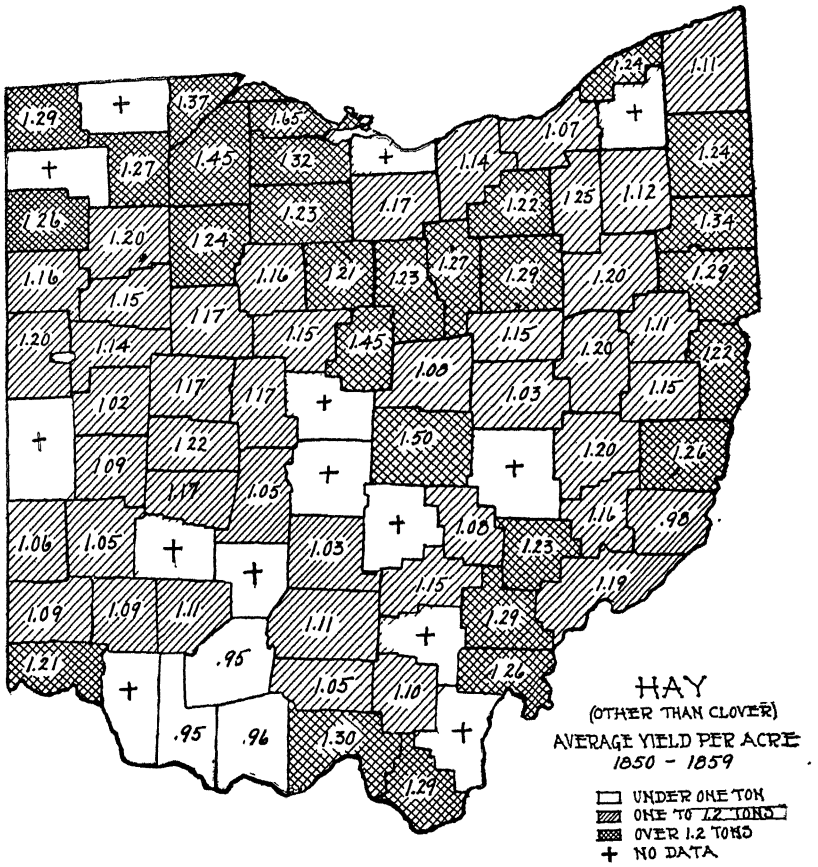
HAY

Hay (other than clover)

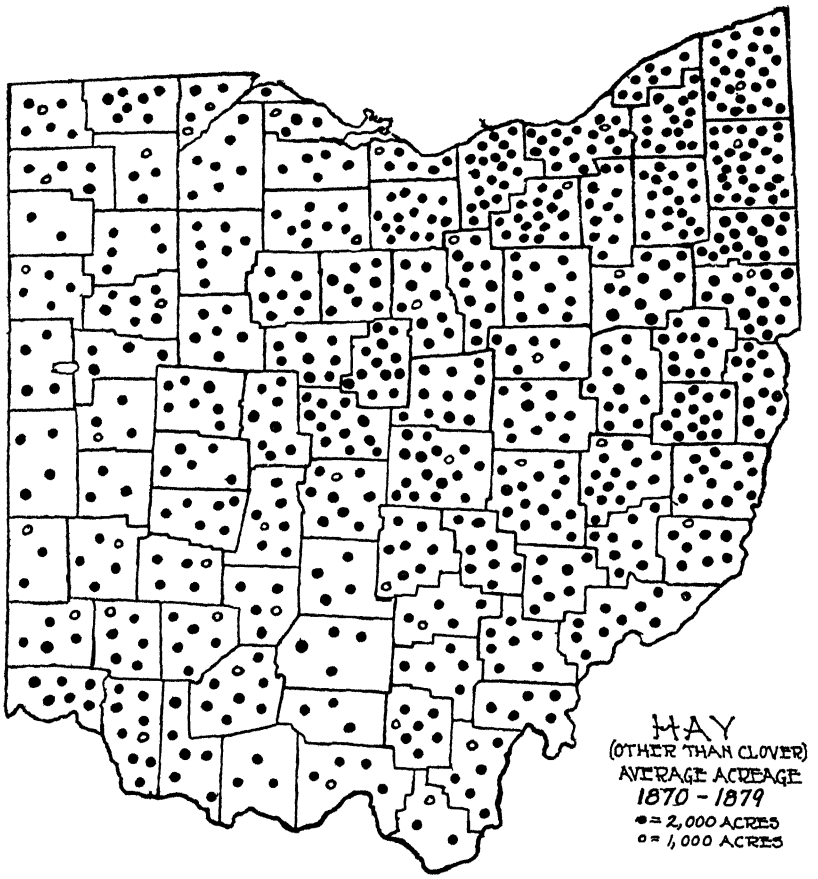
	Average area	Average yield per acre
	Acres	Tons
1850-59	1,350,684	1.02
1860-69	1,435,600	1.18
1870-79	1,461,163	1.08
1880-89	1,732,218	1.15
1890-99	2,049,973	1.10
1900-09	2,133,622	1.12



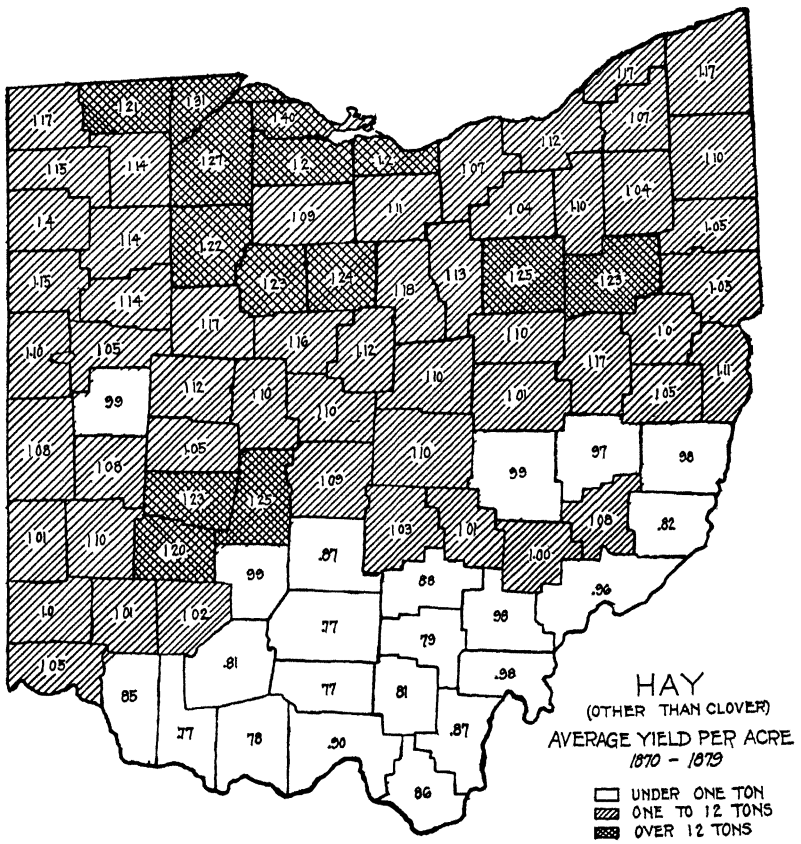
In the discussion below the word "hay," unless otherwise stated, is used to include clover. Of the total area in the four leading farm crops, namely, corn, wheat, oats and hay, 30.7 percent was in hay during the period from 1900 to 1909. During the period from 1860



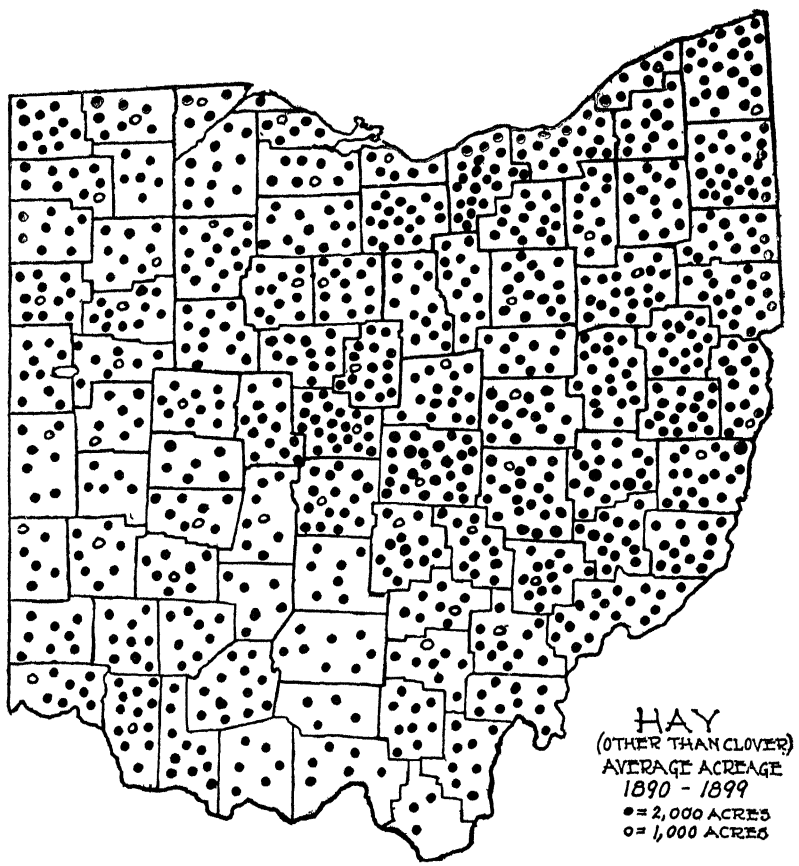
to 1869, it was 28.4 percent. The statistics show a marked increase in hay area from 1870 to 1900. From 1890-1899 to 1900-1909 about one-half of the western counties showed a small decrease in the area in hay. In the eastern counties nearly all showed a slight increase; for the State as a whole there was little change.



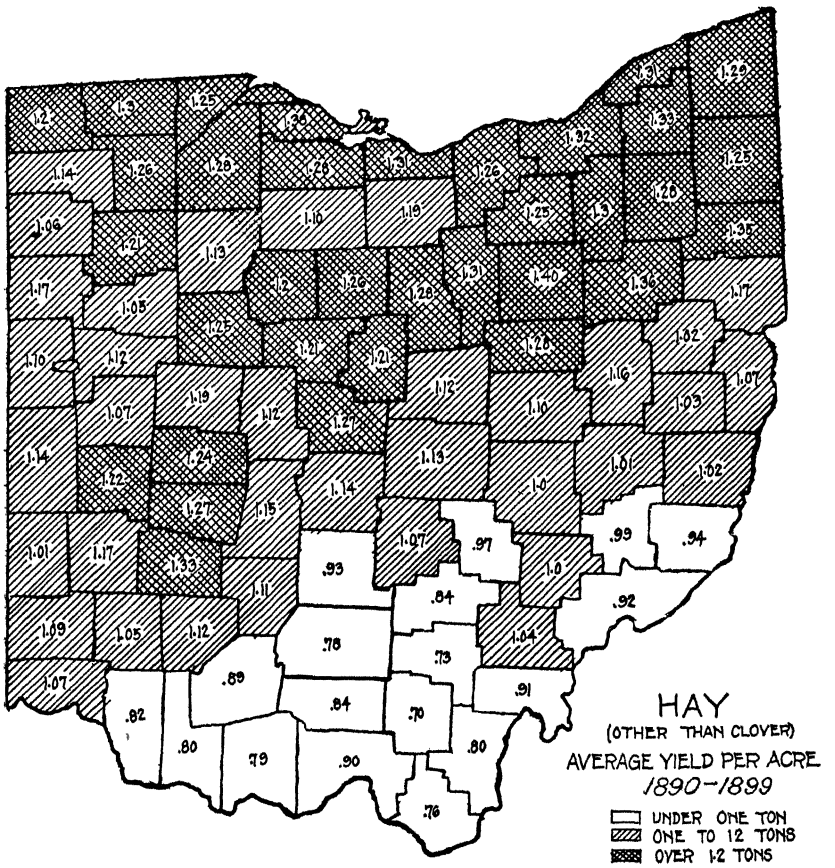
The northeastern counties have always led in hay production. Trumbull and Ashtabula leading all other counties in the State in hay acreage. In the Western Reserve counties there has been little change in acreage for the past 60 years. Of the 97,500 acres in the above crops in Trumbull County during 1900-1909, 55.1 percent was

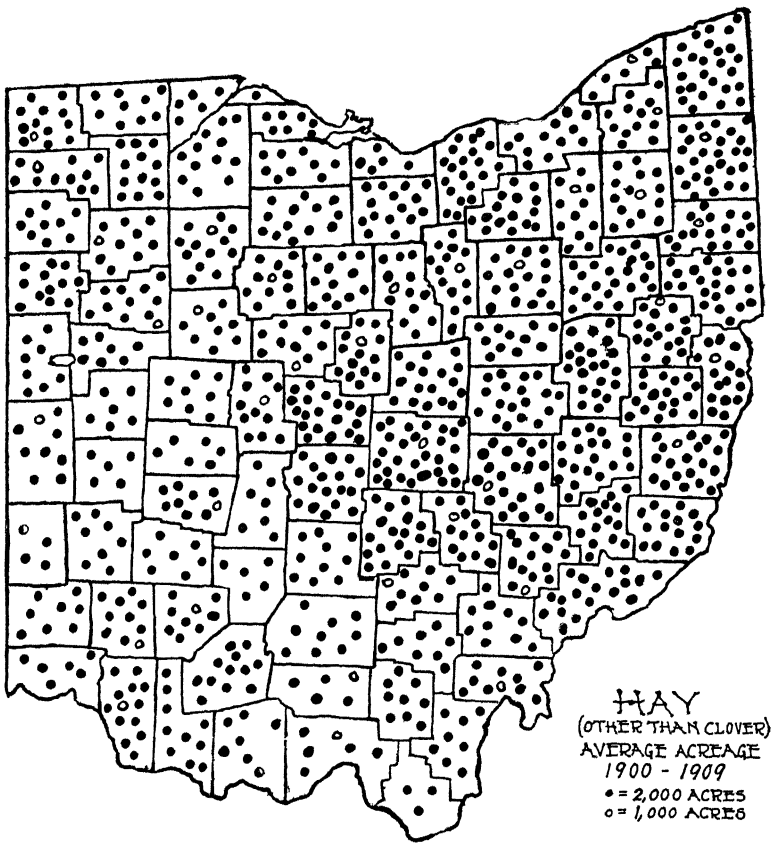


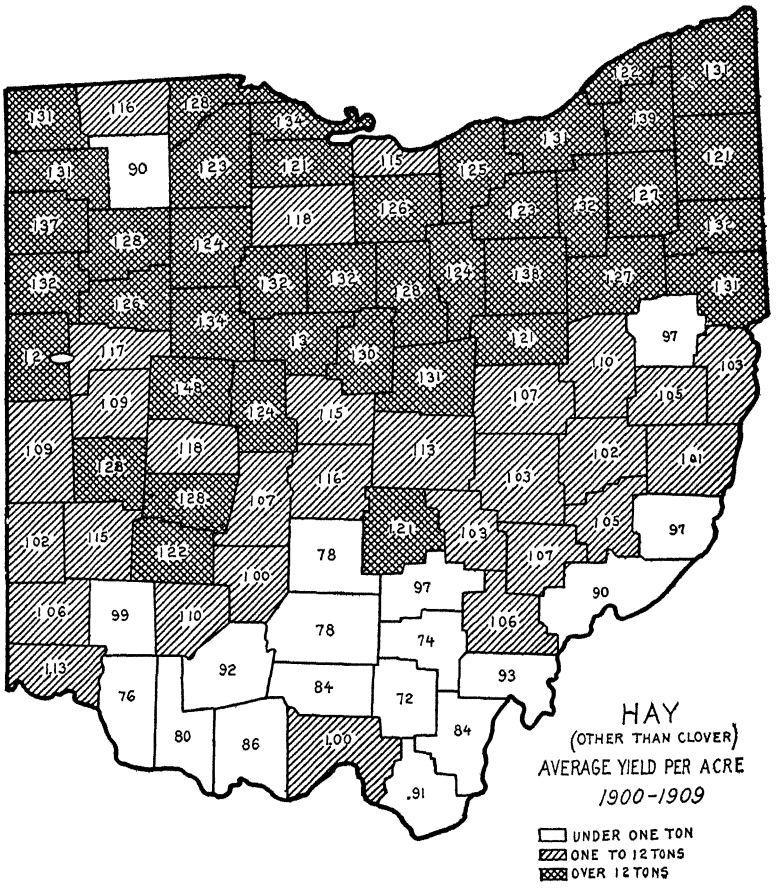
in hay, while in Wood County of 193,500 acres, 18.4 percent was reported to be in hay. Thus, it will be seen that the relative importance of hay as a farm crop varies widely with the section of the State. The distribution of the clover acreage shows the preference of this crop for the limestone soils.



With reference to yields, during the decade 1900-1909 the northern half of the State shows the highest average yields while the southeastern counties shows the lowest yields. The average yield for the State shows little change during the 60 years.

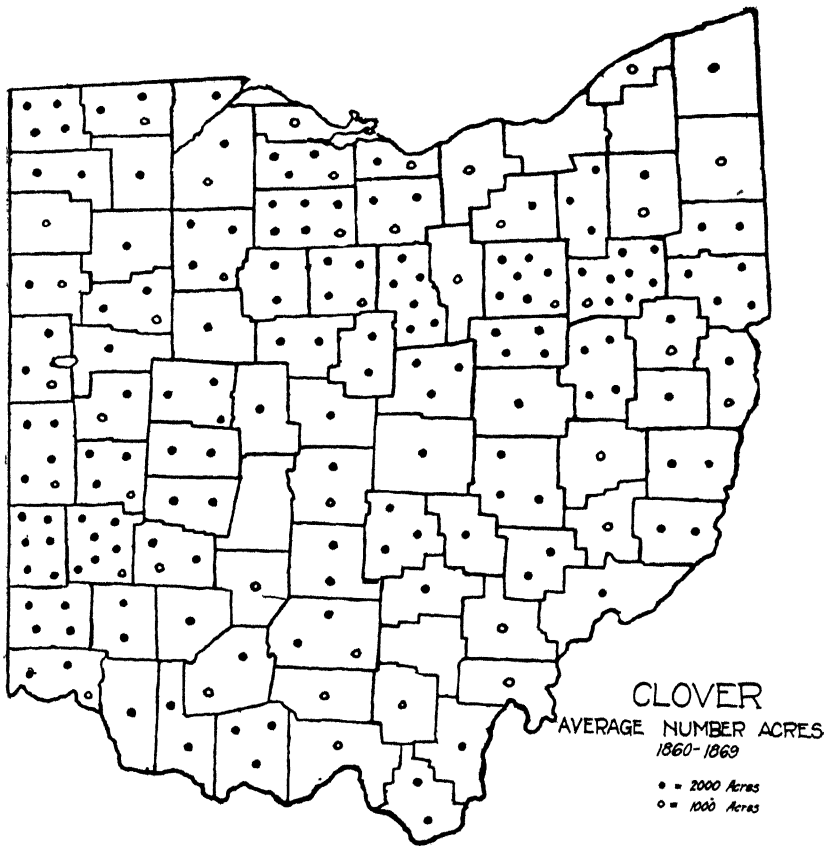


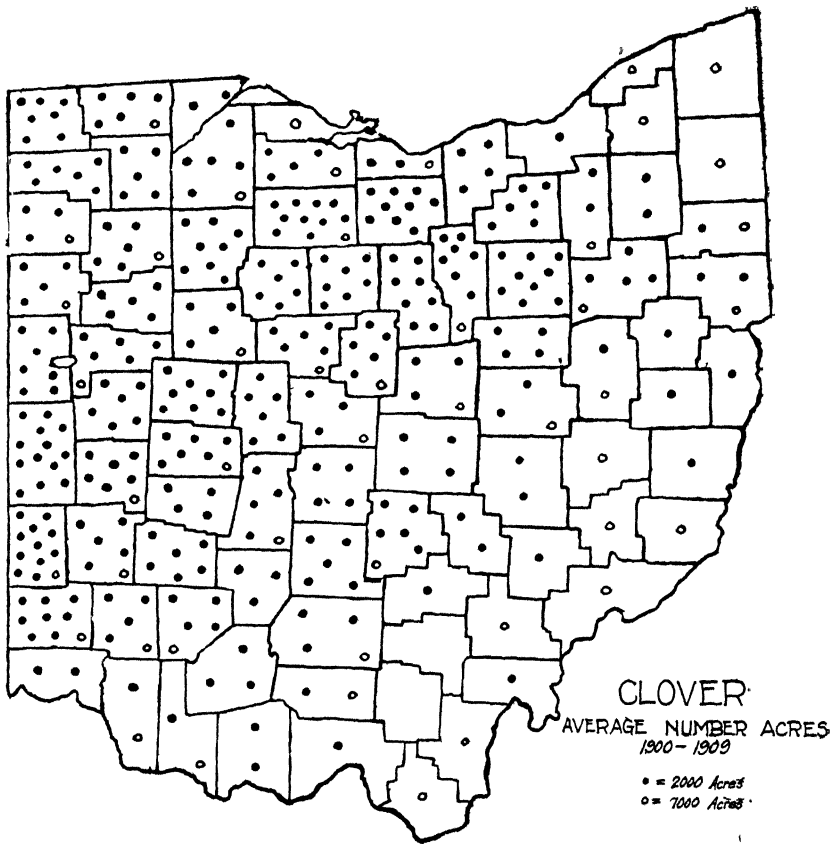

HAY
(OTHER THAN CLOVER)
AVERAGE ACREAGE
1900 - 1909
• = 2,000 ACRES
o = 1,000 ACRES


HAY
(OTHER THAN CLOVER)
AVERAGE YIELD PER ACRE
1900-1909
UNDER ONE TON
ONE TO 12 TONS
OVER 12 TONS

Clover

	Average area Acres	Average yield per acre Tons
1860-69	352,869	.82
1870-79	451,925	.85
1880-89	617.291	.94
1890-99	623,792	.99
1900-09	681,787	1.13

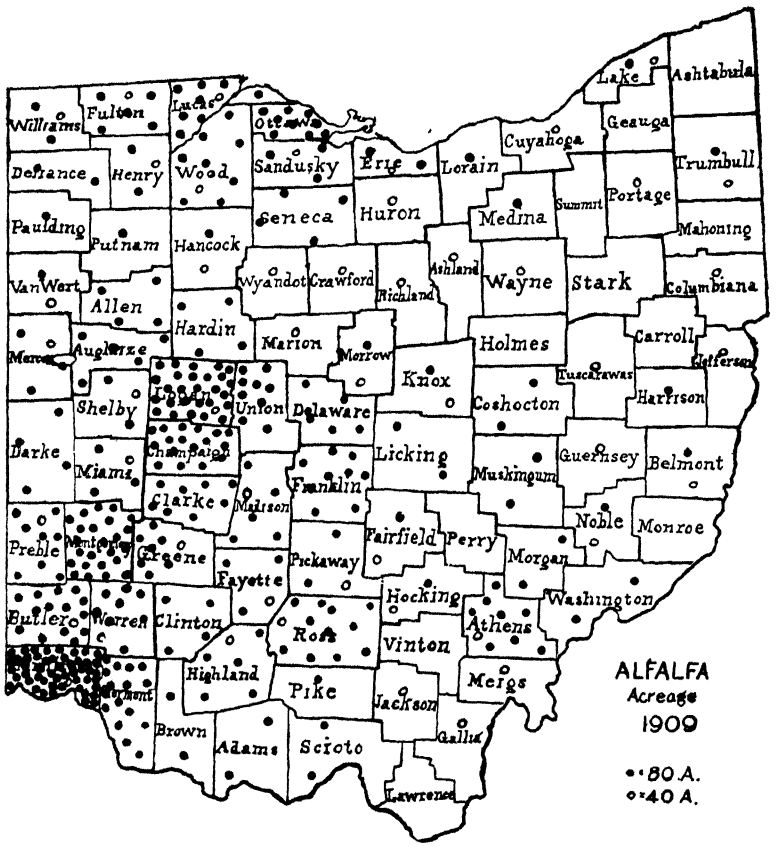



CLOVER
AVERAGE NUMBER ACRES
1900 - 1909
• = 2000 Acres
o = 7000 Acres

ALFALFA

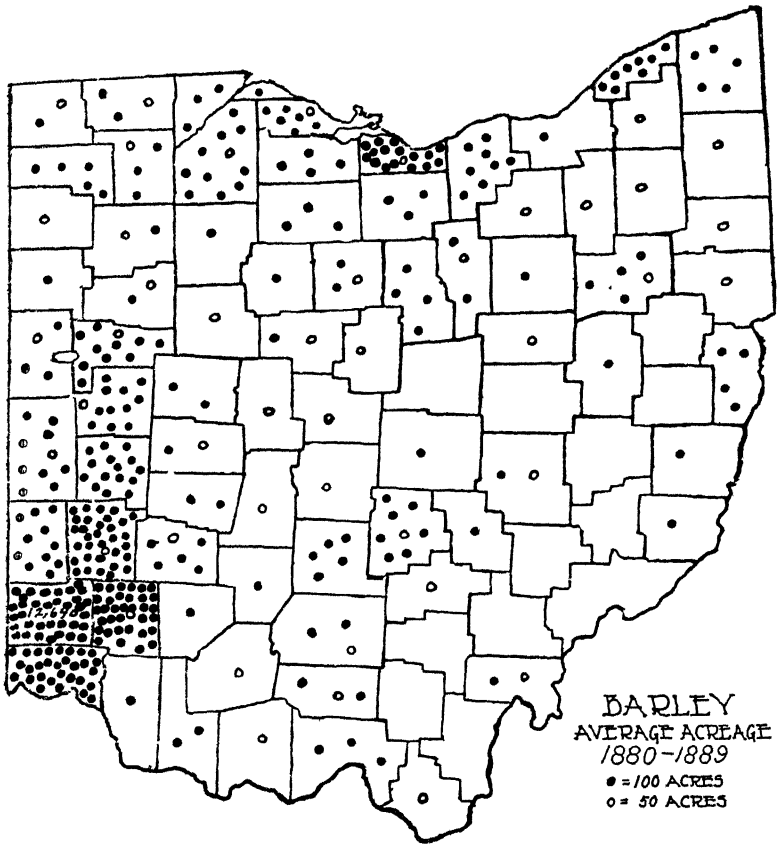
1900	2,944 acres
1910	29,349 acres

With most Ohio farmers alfalfa production was still in the experimental stage in 1900. During the next 10 years it became well established as a profitable farm crop in many sections of the State. The Miami Valley, Champaign and Logan Counties were the centers of alfalfa production in Ohio in 1910. The vicinity of Toledo and Athens County were minor centers.

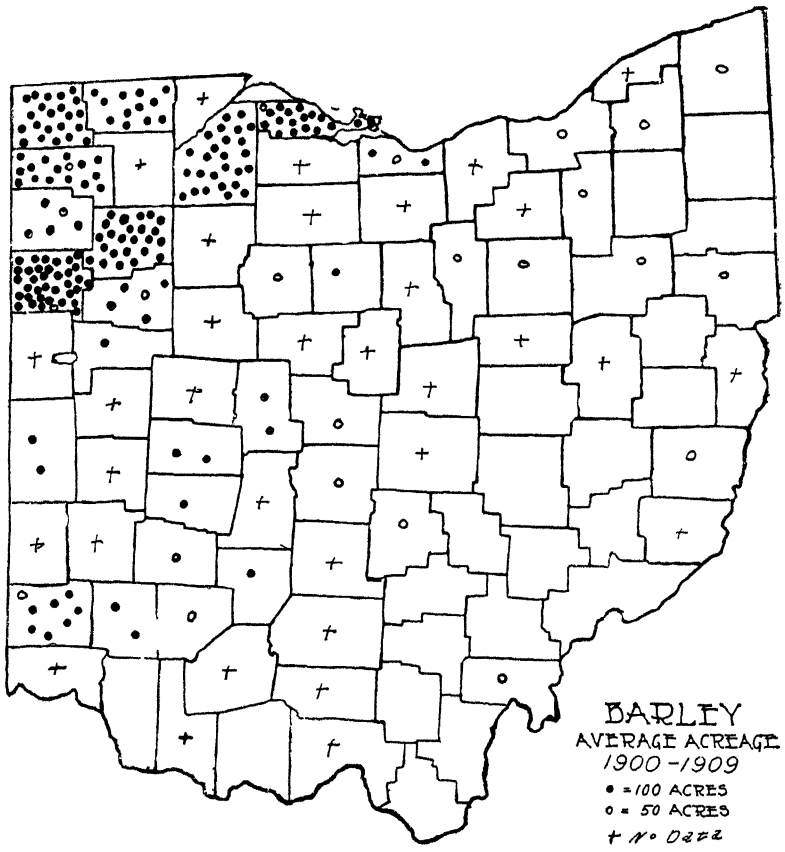


BARLEY

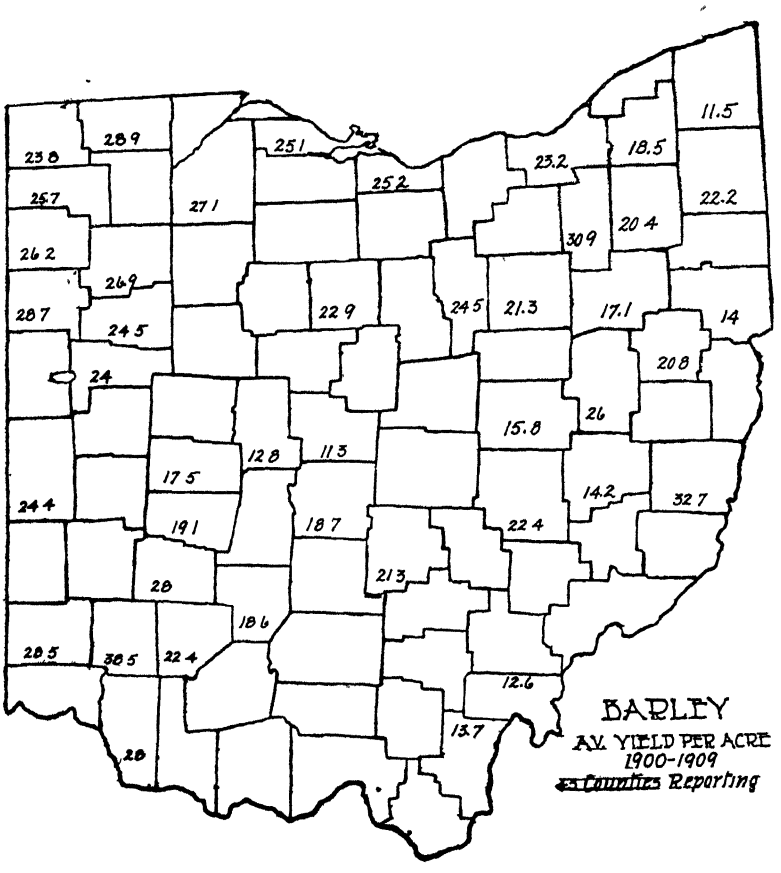
	Average area	Average yield per acre
	Acres	Bushels
1850-59	97,823	17.7
1860-69	81,252	18.5
1870-79	68,801	22.4
1880-89	45,162	22.2
1890-99	25,208	20.9



During the decade 1900-1909 the State figures report the barley acreage for only thirty-four counties. The census, however, reports an area of 34,058 acres for the State in 1899 and of 24,075 acres in 1909, which would indicate that the area decreased during that period.

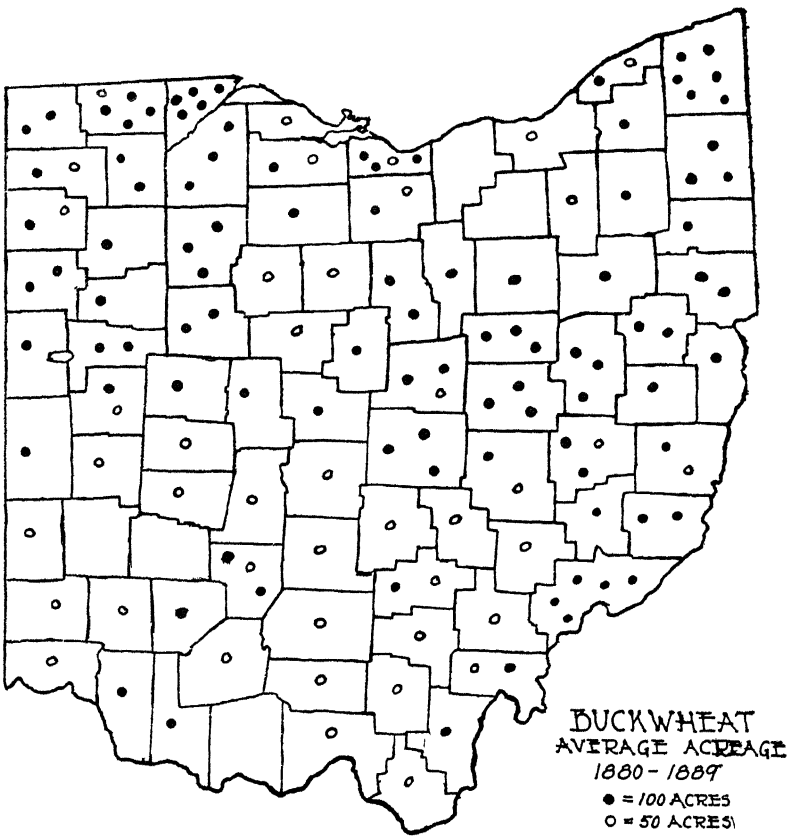


While the barley area for the State has steadily decreased since 1850, there has been a tendency for it to increase in thirteen of the northwestern counties. The barley acreage in the southwestern counties has steadily decreased until in 1910 nearly all the barley of the State was produced in thirteen northwestern counties.



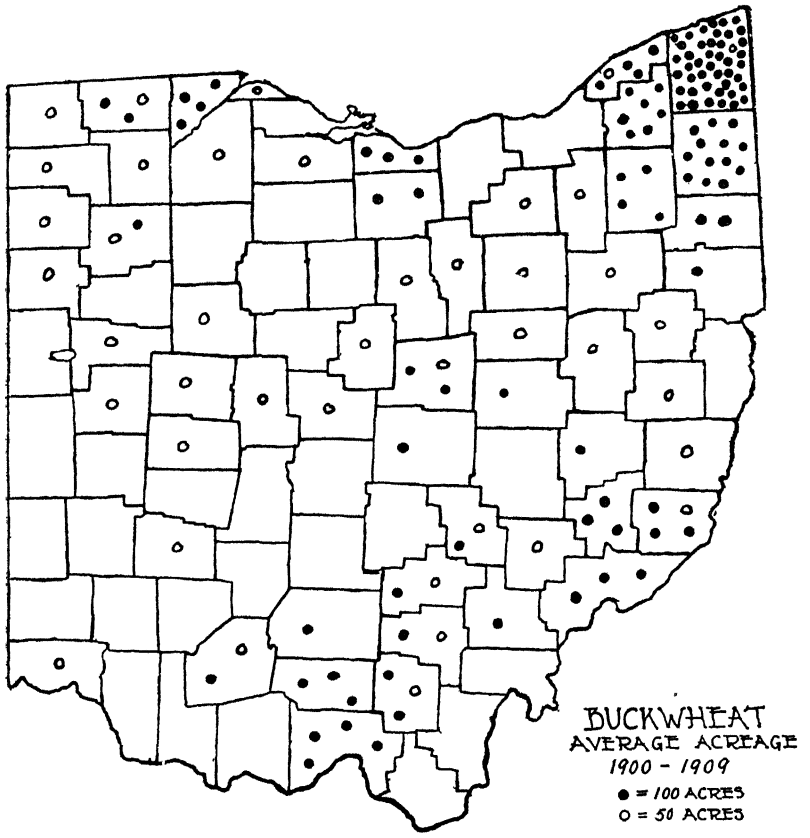
BUCKWHEAT

	Average area	Average yield per acre
	Acres	Bushels
1850-59	109,203	13.1
1860-69	54,358	12.4
1870-79	32,404	10.7
1880-89	11,248	11.1
1890-99	14,659	14.0
1900-09	13,220	16.3

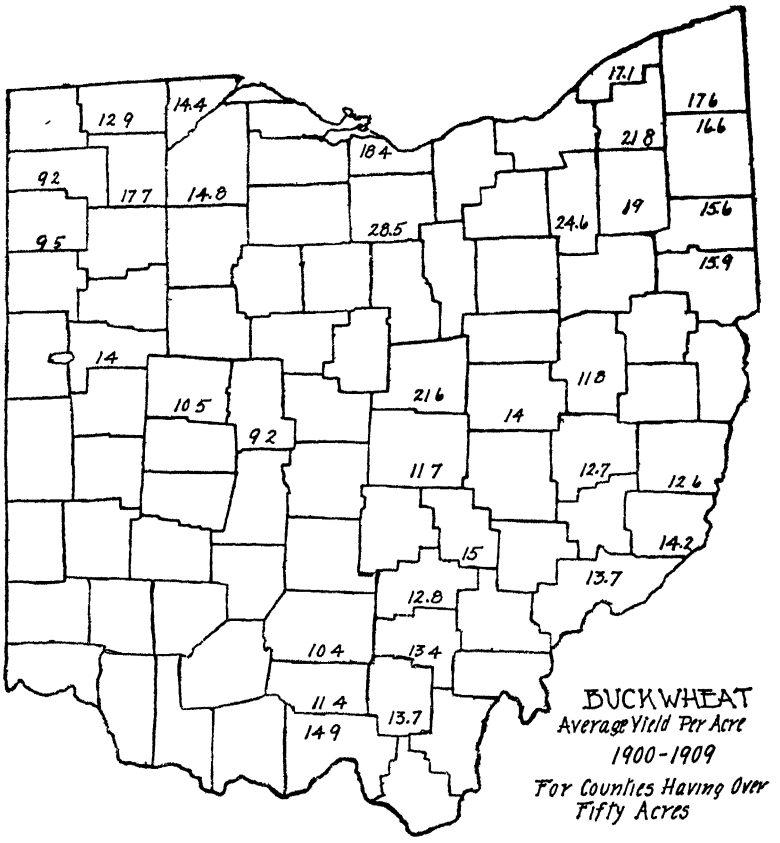


During the period 1900-1909 only three Ohio counties, Ashtabula, Trumbull and Geauga averaged over 500 acres of buckwheat. Ashtabula and Trumbull Counties alone had more acres of buckwheat than the total of all the other counties of the State; the buckwheat area of the entire state averaged only about one-half the oat area of Ashtabula County alone.

With few exceptions the counties of the State show a decrease in buckwheat acreage for the two decades from 1850 to 1870. In

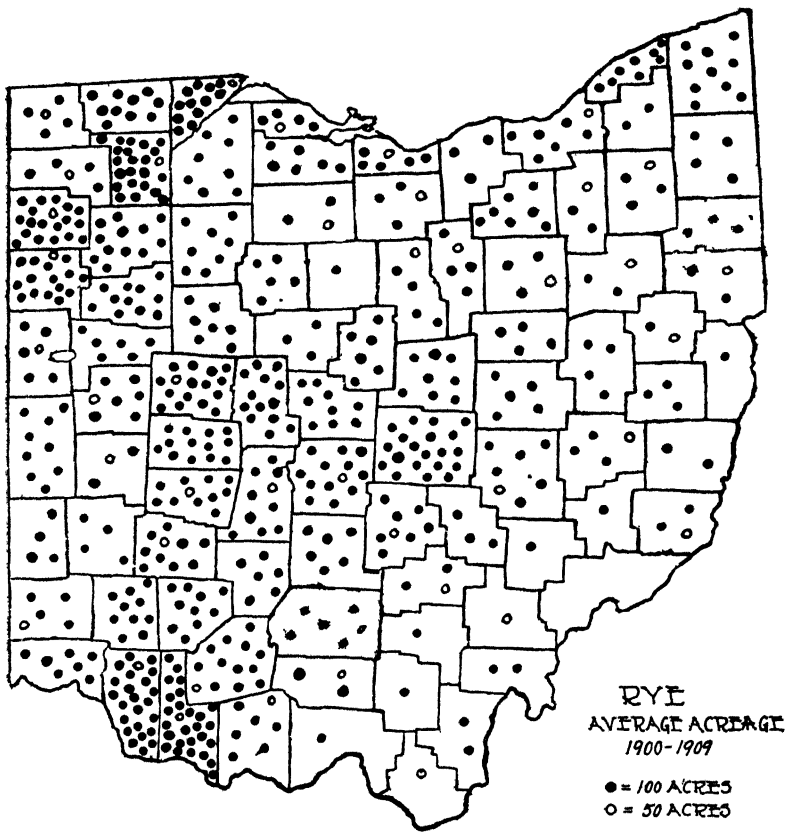


early years it was a prevailing practice to sow new land in buckwheat. Since 1880 the buckwheat area of the State has remained fairly constant. Its production, however, continued to decrease in the western half of the State, while it increased in some of the eastern counties, particularly the three mentioned. Land which is prepared too late for corn or oats, or new land is frequently sown to buckwheat.

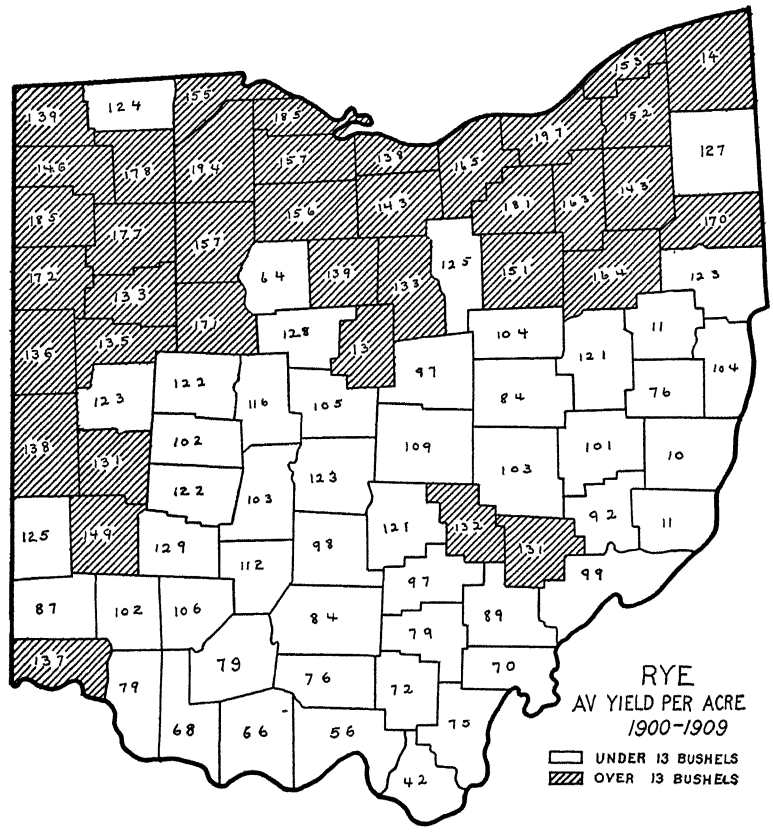


RYE

	Average area	Average yield per acre
	Acres	Pounds
1850-59	90,571	7.7
1860-69	75,618	12.5
1870-79	38,578	11.2
1880-89	54,699	12.9
1890-99	53,634	11.1
1900-09	57,426	12.0

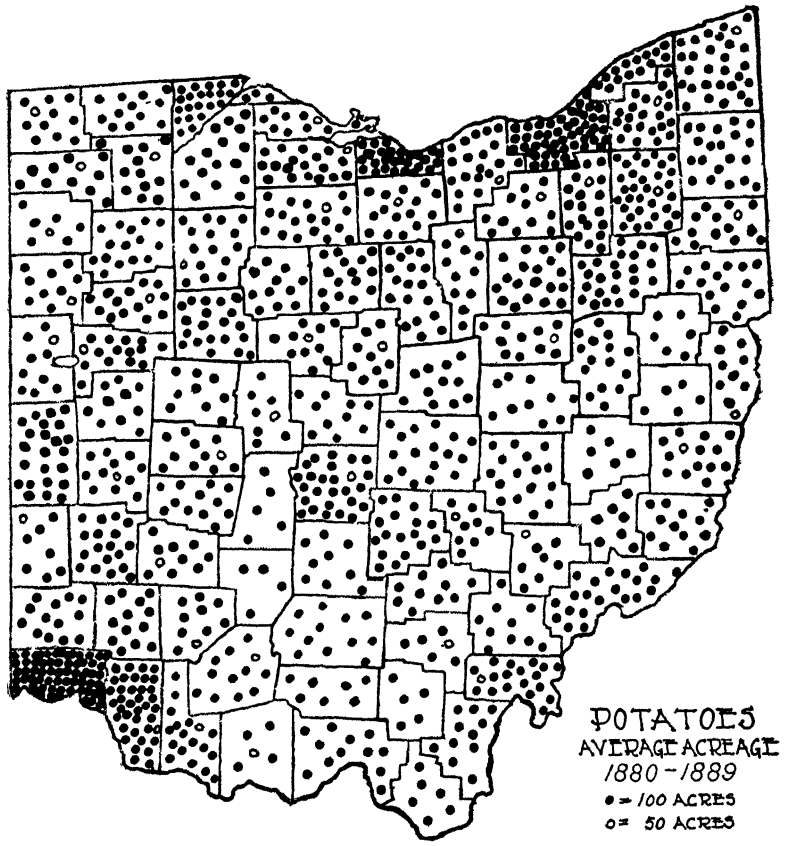


During the period 1900-1909 the total average area in rye was only 20 percent greater than the wheat area of Stark County alone. Sixteen Ohio counties raised over 1,000 acres of rye; in only three, Henry, Clermont and Brown, did the area raised exceed 2,000 acres. During the 30 years, from 1880 to 1910, there was little change in the total rye area of the State. Some counties have shown an increase in area, others a decrease. There has been little change in average yield.

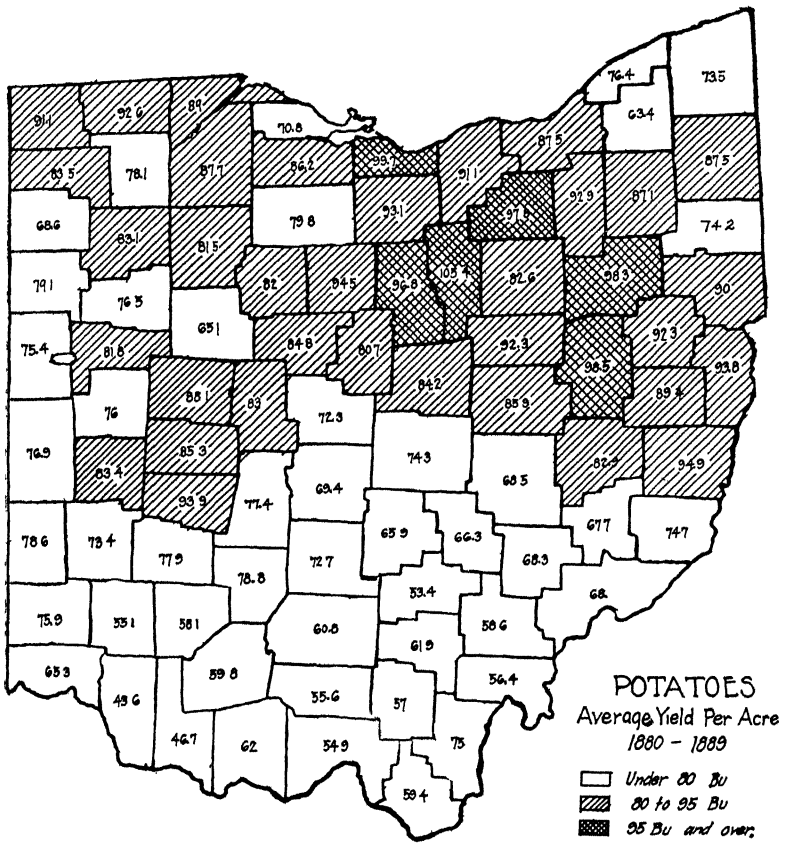


POTATOES

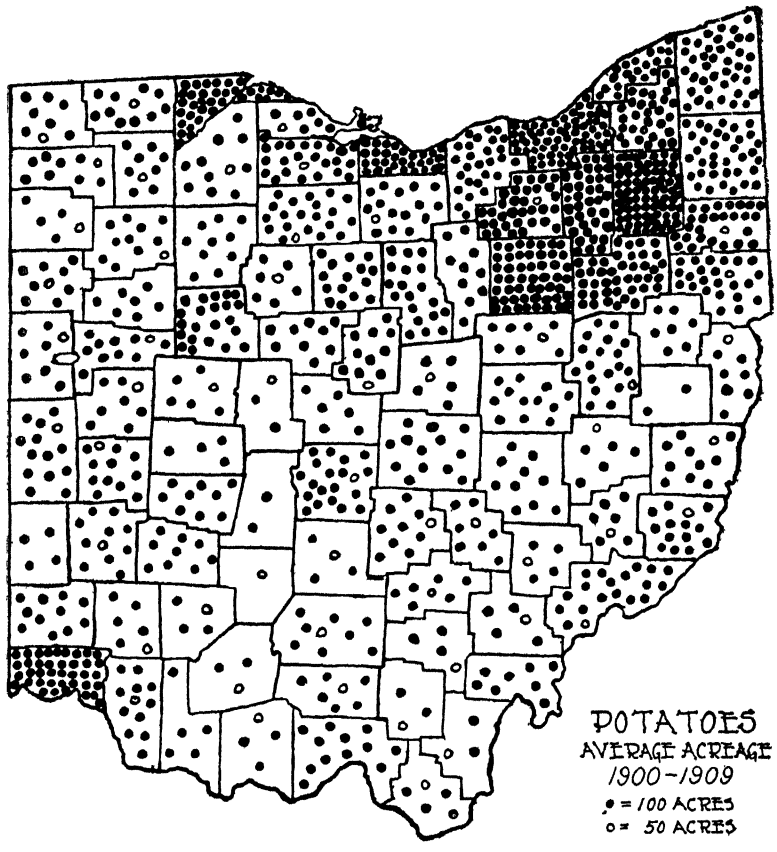
	Average area	Average yield per acre
	Acres	Bushels
1860-69	88,113	76.7
1870-79	113,041	74.3
1880-89	126,386	77.5
1890-99	130,264	74.9
1900-09	125,376	92.4



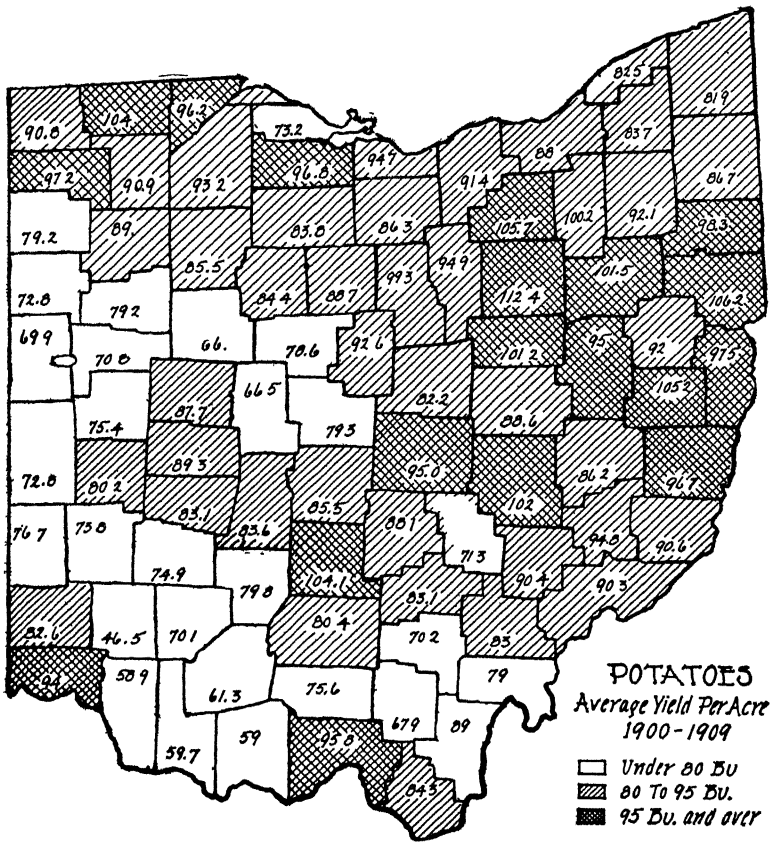
There was little change in the total acreage in potatoes from 1870 to 1910. During the decade of the 'eighties there were sixty-one counties which averaged more than 1,000 acres of potatoes. During the decade 1900-1909 there were forty-one counties having an acreage of 1,000 acres or more. During the latter decade twenty



counties in the northeastern quarter of the State produced one-half of the State's potato crop. Portage County with an area of 8,133 acres in potatoes ranked first while Cuyahoga County with 6,818 acres ranked second. Local markets have done much to encourage potato production in this section.

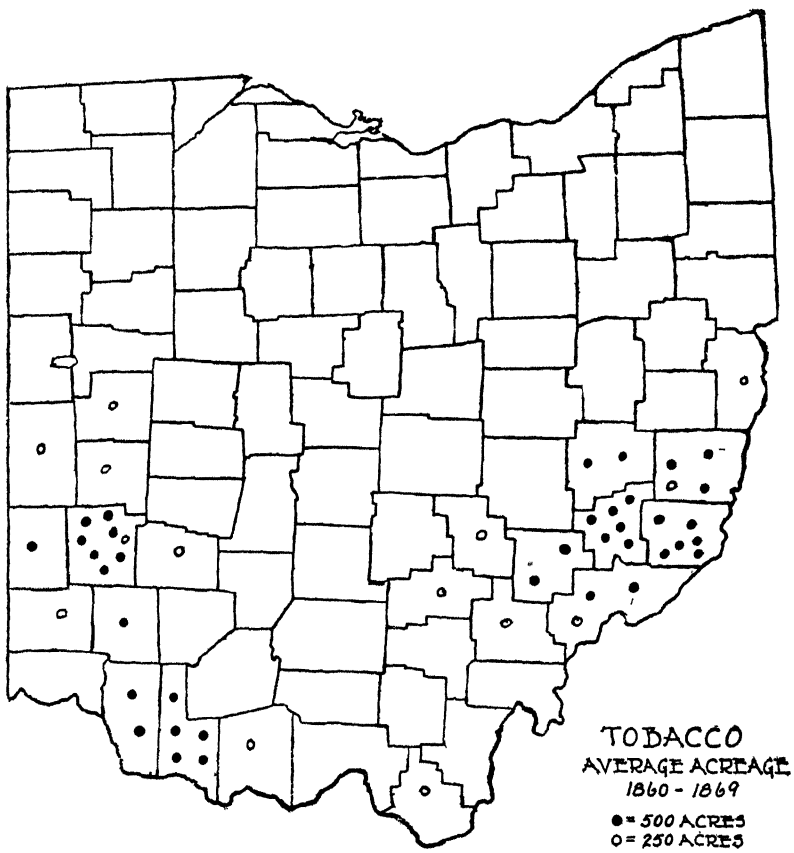


The above figures would indicate a considerable increase in the average yield during the decade 1900-1909. During the decade 1880-1889 only six counties reported an average yield of over 95 bushels; during the decade 1900-1909 there were nineteen counties reporting average yields above that amount.



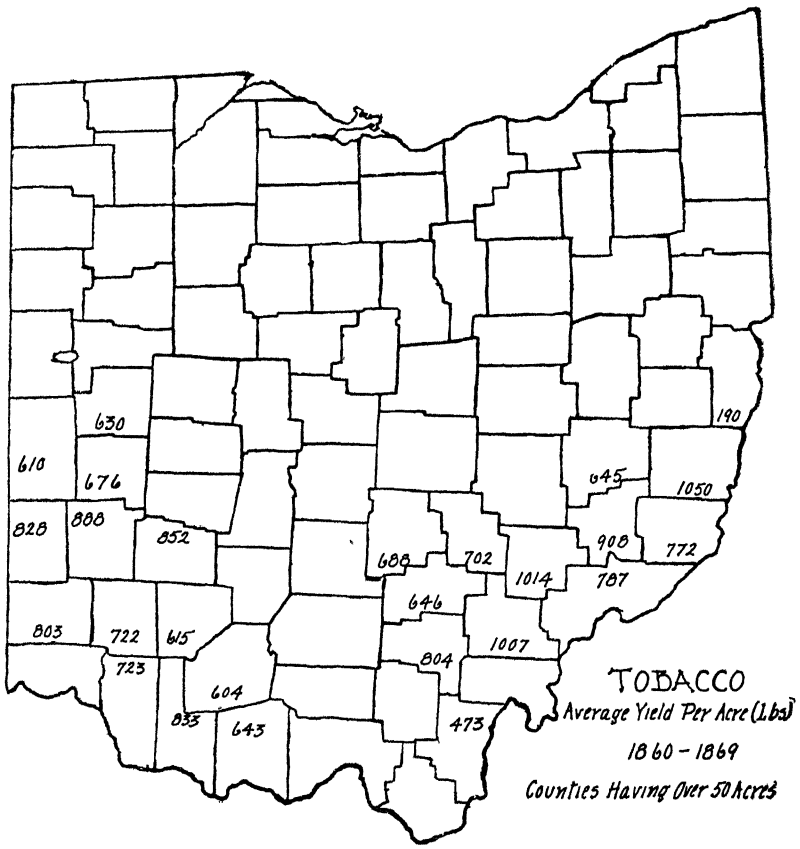
TOBACCO

	Average area	Average yield per acre
	Acres	Pounds
1860-69	23,001	829
1870-79	30,544	860
1880-89	33,844	811
1890-99	44,275	800
1900-09	65,212	808

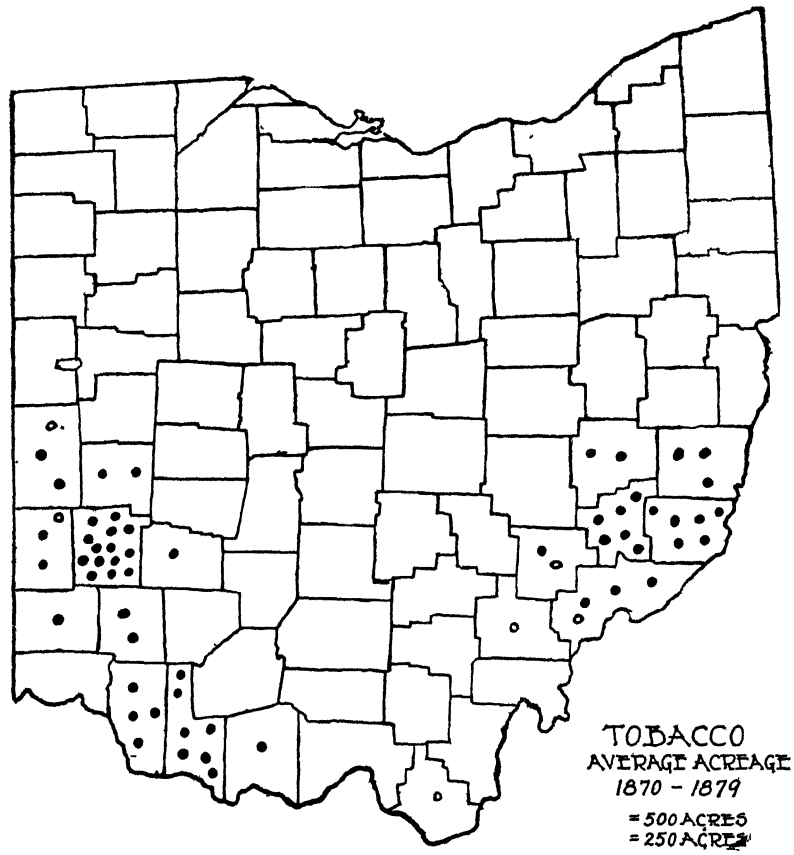


In 1910 there were four more or less distinct districts growing tobacco in the State, namely, the eastern district, the Miami Valley district, the southern Ohio district and the Medina-Wayne district. Of these the eastern Ohio district is the oldest and up to 1880 was the leading tobacco-producing section of the State.

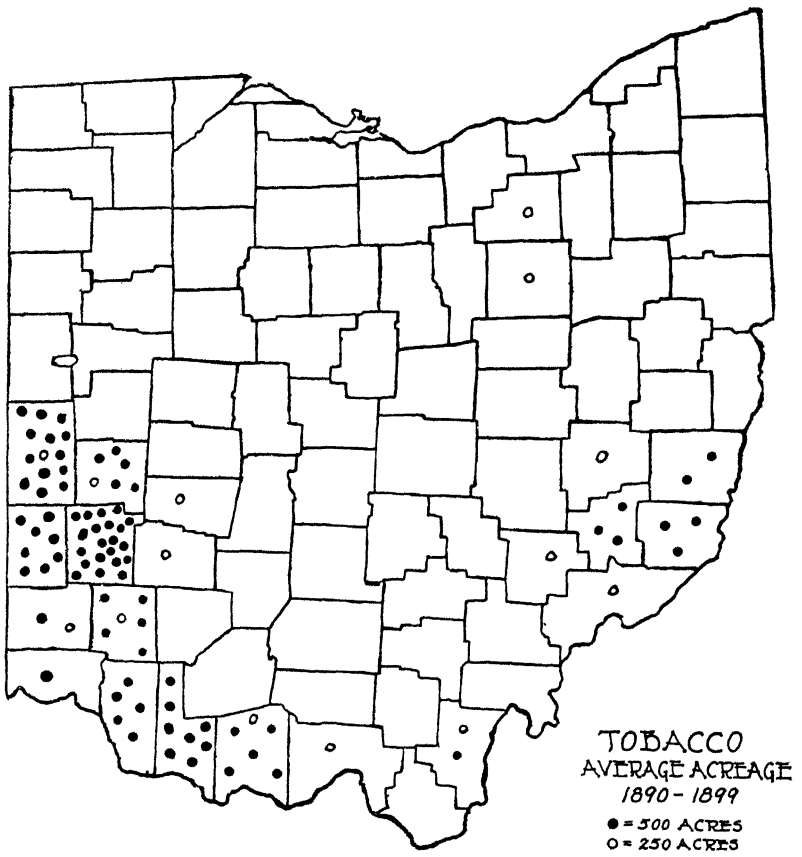
During the decade of the 'sixties there were seven Ohio counties which produced an average of more than 1,000 acres of tobacco, of



these one (Montgomery) was the Miami Valley district, one (Brown) was in the southern district and the remaining five were in the eastern district. Montgomery County, with an average acreage of 3,799, led all Ohio counties. After 1860-1869 there was little increase in the tobacco area of the eastern district, since 1880 the area has steadily declined. The area in the Miami Valley and southern district has been rapidly extended.



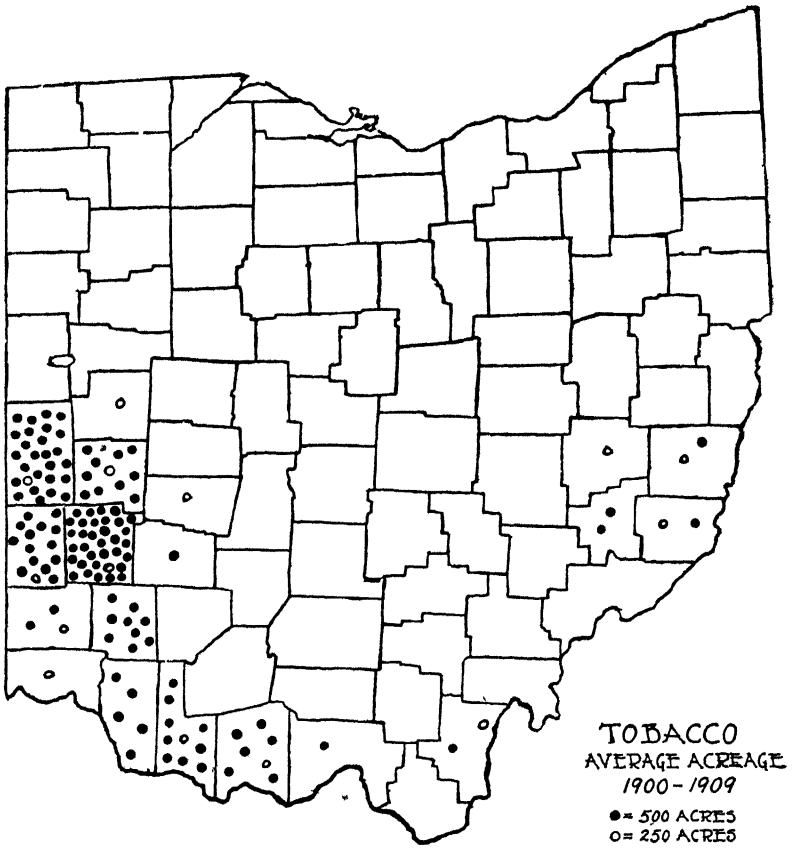
During the decade of the 'seventies there were ten counties which averaged more than 1,000 acres of tobacco; of these, four were in the Miami Valley district, two in the southern district and four in the eastern district. During this period the first of these districts surpassed the latter in area planted, and since that time has been the leading tobacco-producing section of the State. During the decade of 1900-1909 the average area of tobacco in Montgomery County alone was four times greater than the entire area



in the counties east of the Scioto River. Along with the Miami Valley district has developed the smaller southern Ohio district.

The Medina-Wayne district developed largely from 1870 to 1890. Since the latter date the area of tobacco here has decreased. It has remained the smallest of the four tobacco districts of the State.

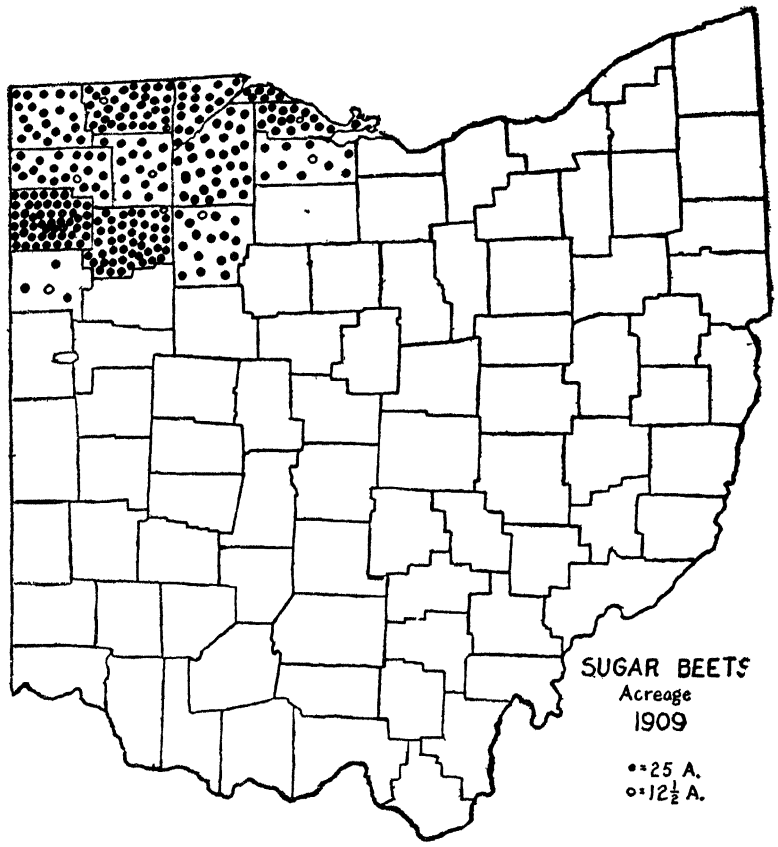
For the past 30 years the average yield for the State as a whole has changed but little. The average yields for the Miami Valley section, however, show a decrease since 1880, while that of the



eastern Ohio district shows an increase. It is difficult to say just how far this decrease in average yield in the Miami Valley district may be due to the expansion of the tobacco area onto land less adapted to tobacco or how far the increasing average yield of the eastern Ohio district may be due to the withdrawal of the poorer lands from tobacco production. There was a greater difference between the average yields of the two districts in 1900-1909 than in 1860-1869.

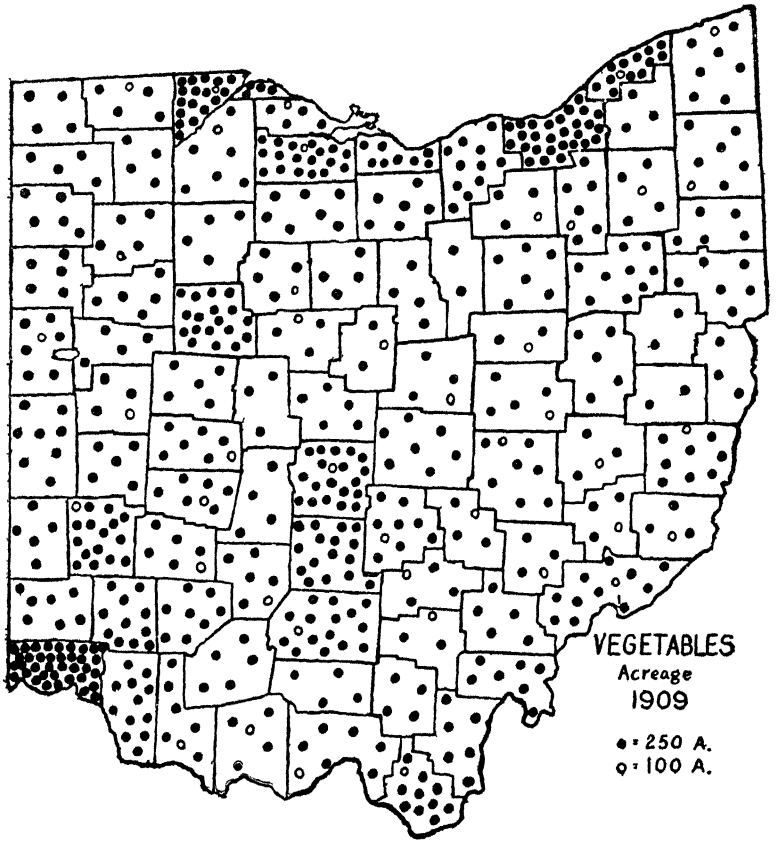
SUGARBEETS

The production of sugarbeets extended down from Michigan into Ohio between 1900 and 1910. Previous to that time there had been no factory in Ohio for the manufacture of beet sugar. In 1909 sugarbeets were grown on a commericial scale in only twelve Ohio counties. On that year 7,036 acres were reported in Ohio.



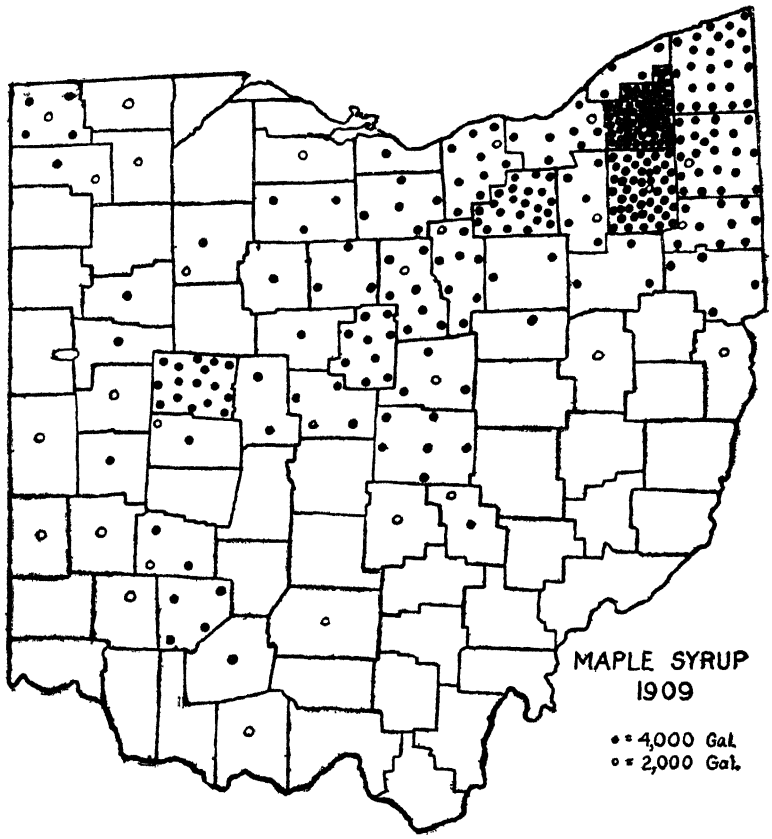
VEGETABLES

The census reports 124,604 acres of land in the State devoted to vegetables in 1909. The greater part of this was in the vicinity of the large cities. Other areas were in Hardin County, where large acreages of onions are grown; the Scioto Valley, where vegetables are grown for canning; and the Muskingum River Valley in Washington County, where truck crops are extensively grown for the Pittsburg market.



MAPLE SYRUP

The census for 1909 reports that 1,323,431 gallons of maple syrup and 257,592 pounds of maple sugar were made in the State in 1909. More than 25 percent of the total maple syrup produced in the State was made in the counties of Geauga and Portage; here the sale of syrup adds materially to the farm income.

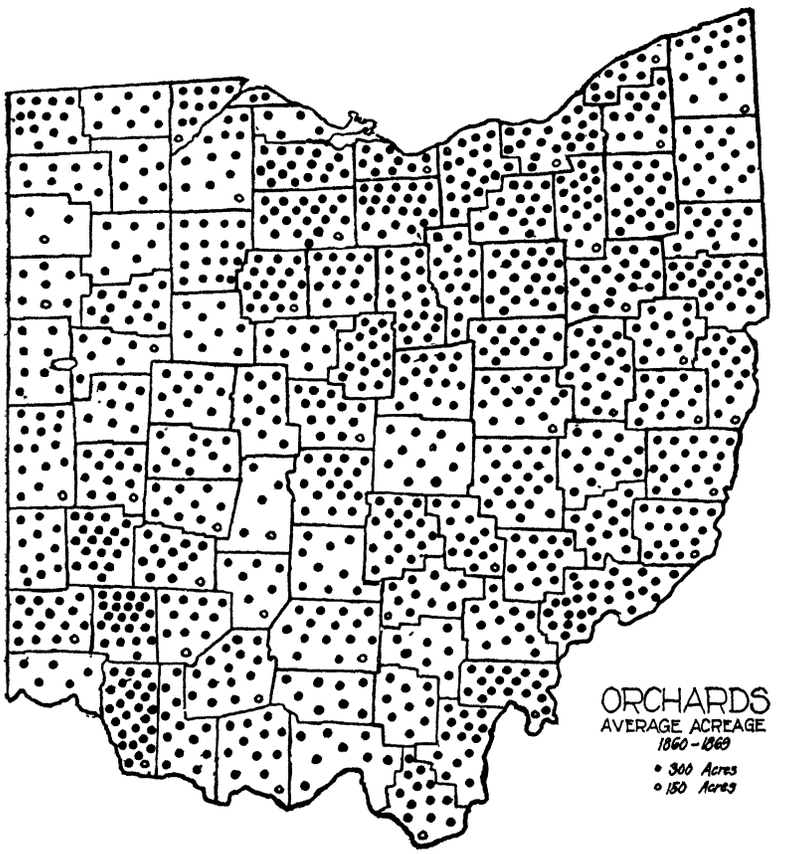


ORCHARDS

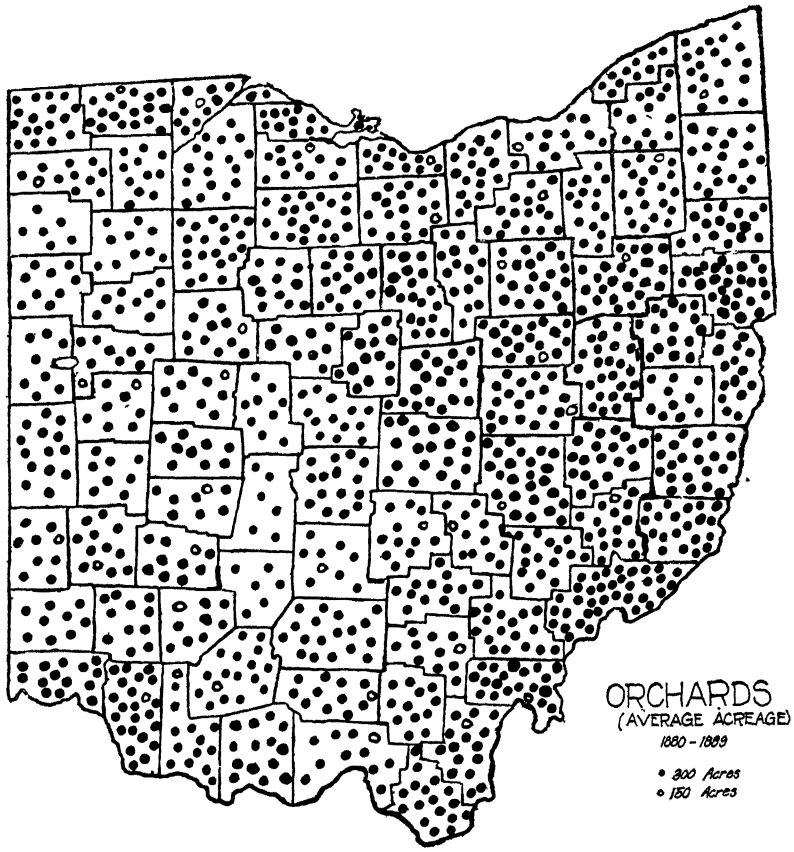
	Average area Acres
1860-69	346,918
1870-79	397,622
1880-89	385,476
1890-99	372,011
1900-09	282,867

Apples

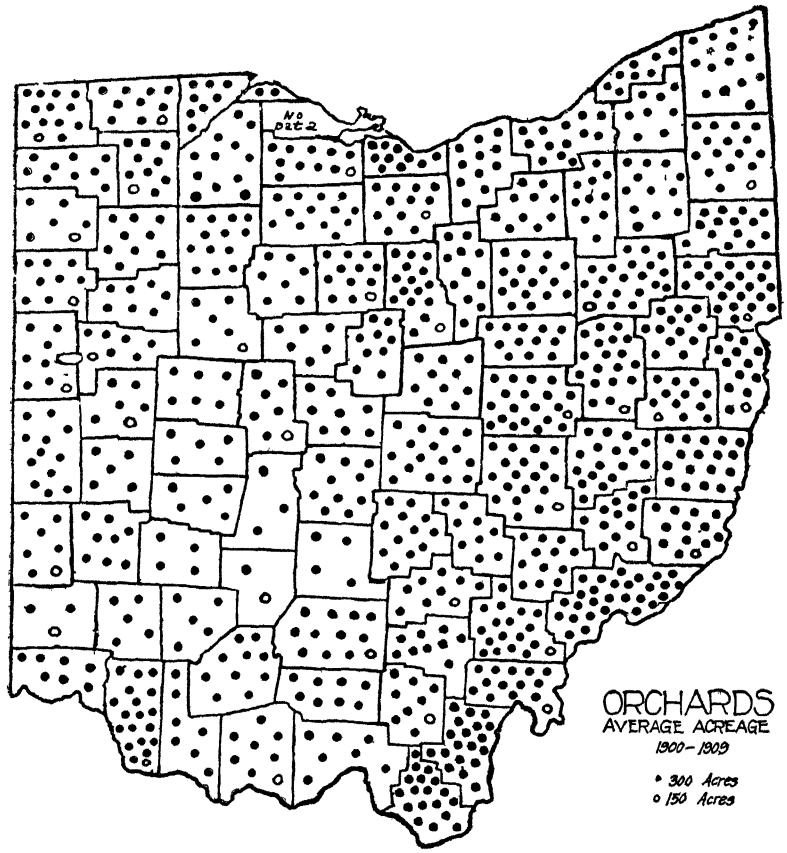
	Average yield Bushels
1860-69	10,540,962
1870-79	14,393,175
1880-89	14,523,096
1890-99	7,484,550
1900-09	6,492,510



The statistics show a large decrease in orchard area during the period from 1890 to 1910. A very large proportion of the total orchard area is in apples. The statistics indicate that there was a decided fall in the yield of apples during the decade 1890-1899 and that this was followed by a reduction in orchard acreage during the following decade. From 1860 to 1880 there was a general increase

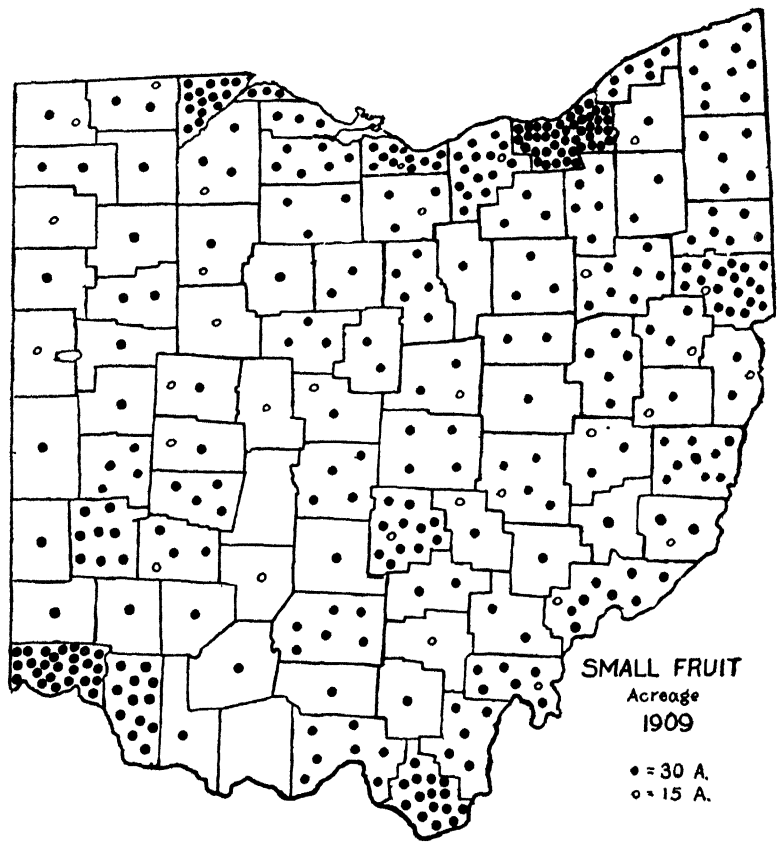


in orchard acreage in all except a few of the southwestern counties. Since 1890 there is shown a reduction in total acreage in all except one or two counties. There have, however, been developed during this period a number of large commercial orchards in several of the eastern counties. Extensive peach orchards have been developed along Lake Erie.



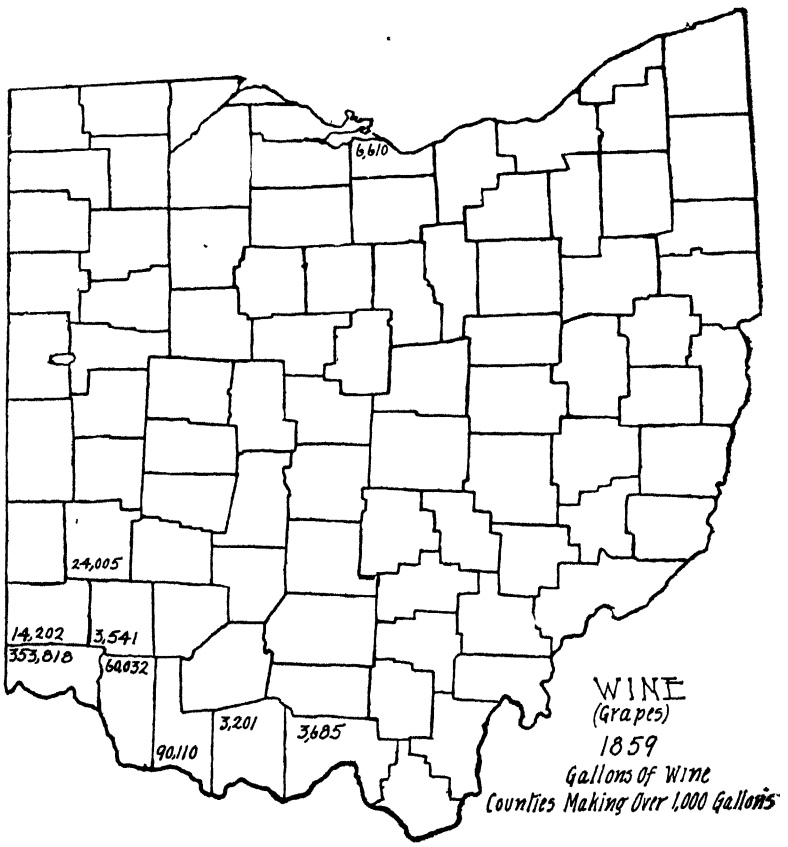
SMALL FRUITS

The census reported 11,591 acres of small fruit in Ohio in 1910. This includes the acreage in strawberries, raspberries and blackberries, loganberries and dewberries. The production of small fruit is extensively carried on in but few Ohio counties.



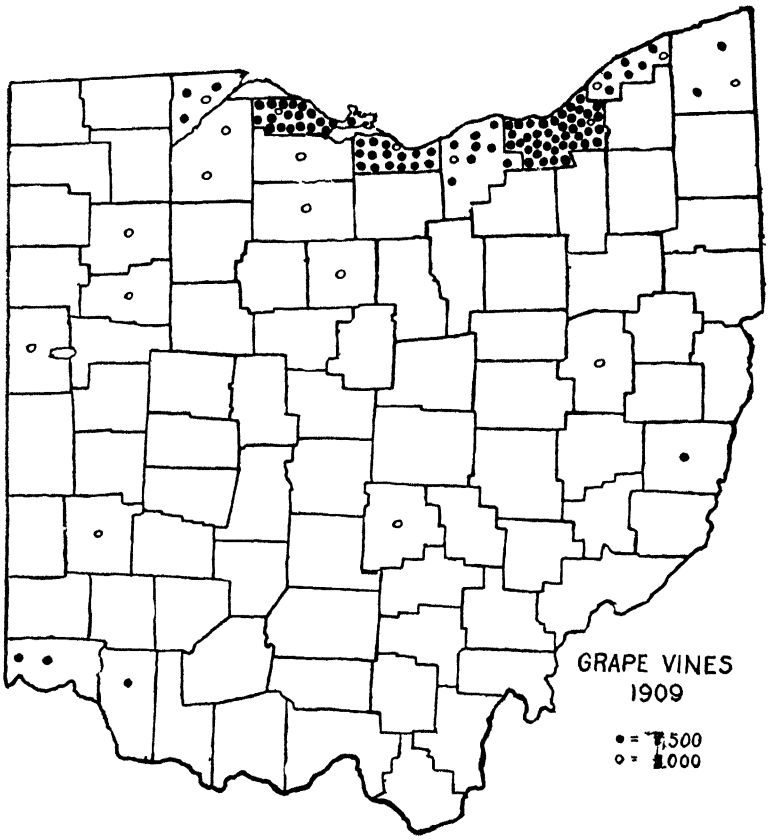
GRAPES

In 1850 grape growing in Ohio centered around Cincinnati. The Ohio Valley was the leading wine-making district of the Country. As early as 1844 Mr. Nicholas Longworth of that city, called "the father of successful wine culture in the West," and the largest wine-maker in Ohio, was reported to have more than 90 acres in vineyard. In 1856 he was said to have bottled about 150,000 quarts. In 1853 the Patent office reported 1,500 acres of land devoted to grape-growing in Ohio of which some 1,400 was within 20 miles of Cincinnati. The Lake District had not yet begun the production of grapes. In 1859 the census reports 568,617 gallons of wine made in Ohio; this was twice the amount made in California, which ranked second in importance.



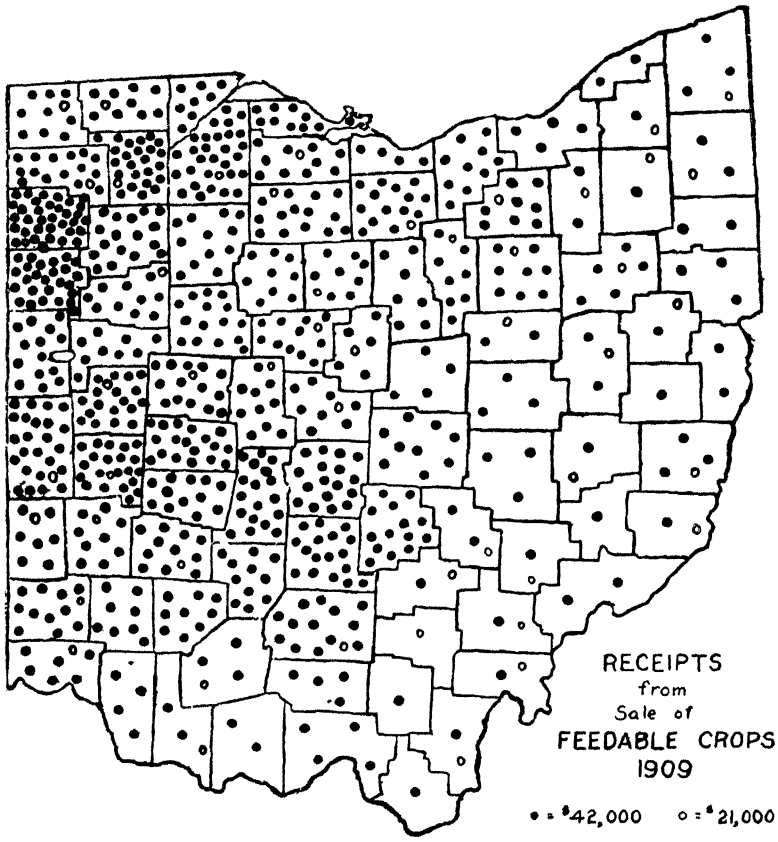
In 1889 the census reported 33,043 acres of grapes in the State, having an average yield of 1.8 tons. A total of 38,947 tons were reported as sold for table use and 11,609 tons sold to wineries. There was reported to have been 1,934,833 gallons of wine made in the State in that year.

The census of 1910 reports 8,326,800 grape vines in the State. Nearly all of these were in six counties bordering upon Lake Erie. More than 3,000,000 were in Cuyahoga County. Hamilton County, which at one time was the western center of grape production, now raises comparatively few.



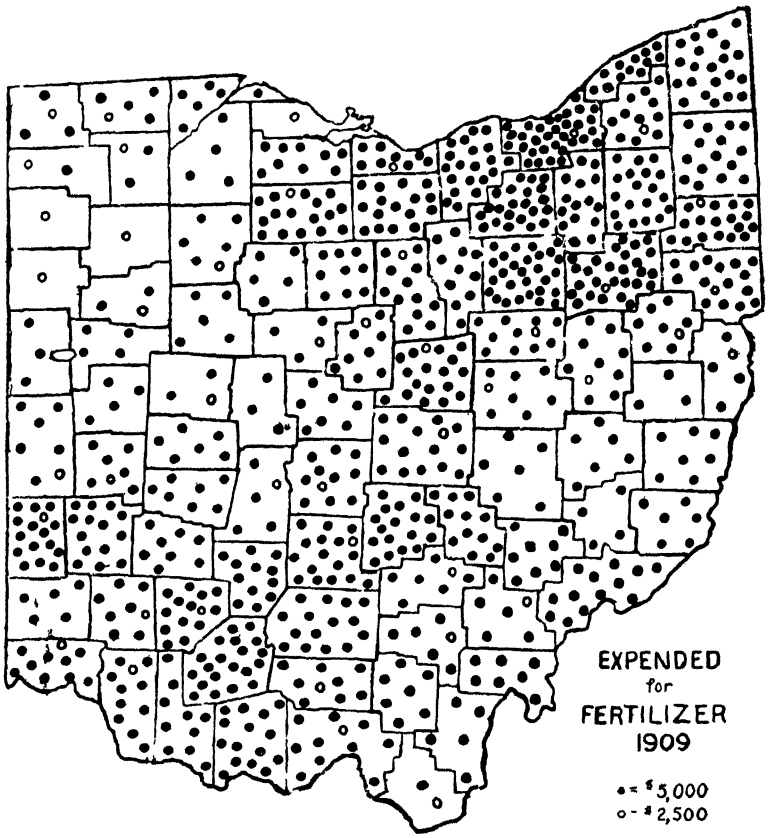
RECEIPTS FROM SALE OF FEEDABLE CROPS, 1909

The census reports $31,396,130 received from the sale of feedable crops in 1909. This does not include wheat or potatoes. The western counties furnish the greater part of the feedable crops sold. Nearly all of the feedable crops raised in the eastern half of the State are consumed upon the farm where raised.



CASH EXPENDED FOR FERTILIZER, 1909

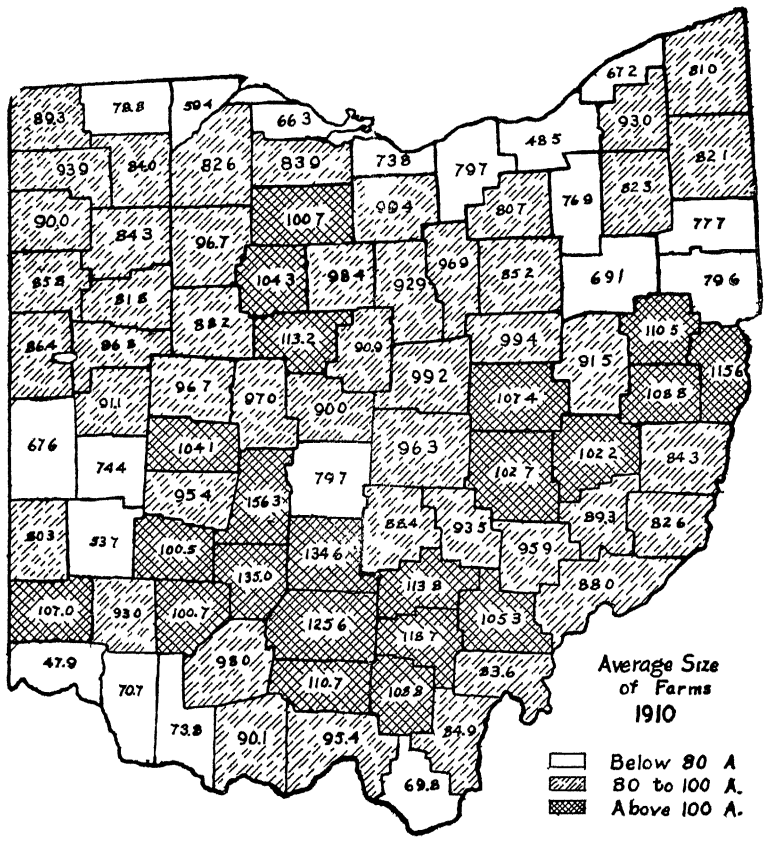
The census reports a total of $4,180,485 spent in the State for fertilizer during 1909. The southern one-third and the northeaster quarter of the State use a large part of the total purchased fertilizer. Cuyahoga, Stark, Wayne and Medina Counties report the largest purchase of fertilizer. Paulding, Van Wert and Putnam Counties the least.



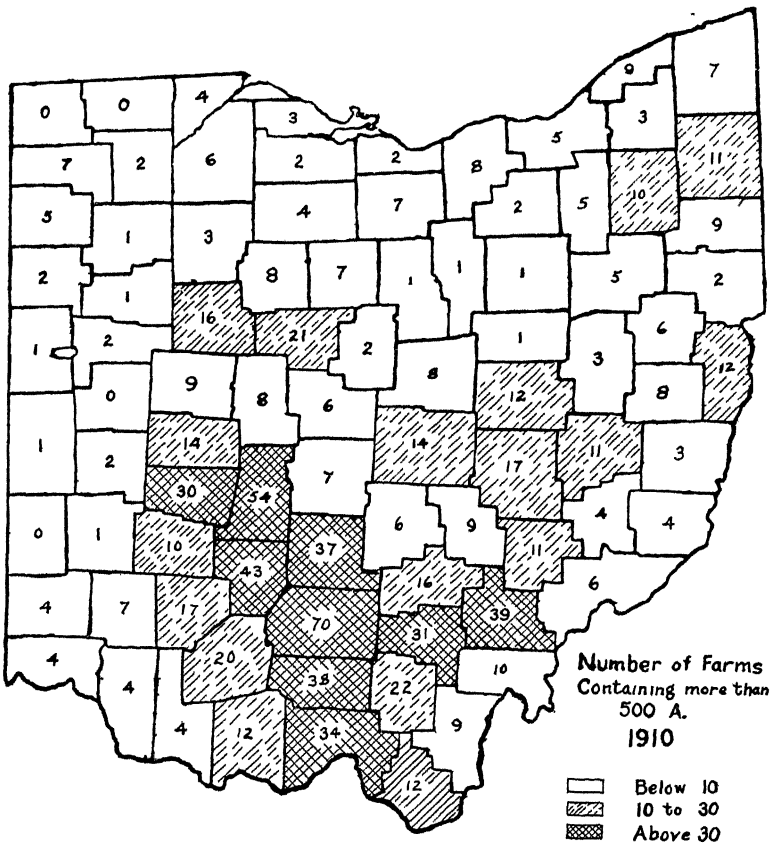
SIZE OF FARMS

	Average farm area	Average area improved land
	Acres	Acres
1860	118.0	72.8
1870	110.8	73.8
1880	99.2	73.1
1890	92.8	72.9
1900	88.5	69.5
1910	88.6	70.7

From 1860 to 1900 there was a tendency for average farm acreage in Ohio to decrease. From 1900 to 1910 there was little change. Improved land, which is a better measure of the volume of farm business carried on upon the farm, shows little change since 1860. Considering the steady increase in the State of the more



intensive types of farming in which a relatively large volume of business is done upon a small area, it is probable that the volume of business done upon the average Ohio farm is increasing rather than decreasing. The most notable feature of the decade, 1900 to 1910, was the tendency for the size of farms to increase in the northwestern Ohio counties. In Paulding County the average size of farms increased from 65.6 acres to 90 acres. In the industrial counties there was a tendency for farms to decrease in size, while in those counties which are largely agricultural there was an evident tendency for the farms to increase in size. The tobacco-growing counties in the southwest were an exception to this. (See table, page 194.)



AVERAGE SIZE OF FARMS IN OHIO COUNTIES, 1860-1910

	Total farm area—(Acres)						Area of improved land—(Acres)					
	1860	1870	1880	1890	1900	1910	1860	1870	1880	1890	1900	1910
The State	118.0	110.8	99.2	92.8	88.5	88.6	72.8	73.8	73.1	72.9	69.5	70.7
Adams	144.8	132.0	116.2	109.2	92.0	90.1	78.7	69.5	68.1	69.8	60.2	60.5
Allen	108.0	103.6	94.6	89.5	85.8	81.8	50.0	55'4	61.8	68.3	68.7	69.1
Ashland	110.7	100.1	99.2	91.9	96.8	96.9	77.5	74.1	76.6	73.8	77.0	76.2
Ashtabula	109.3	98.3	93.2	80.6	82.8	81.0	77.5	73.3	71.5	63.2	48.4	53.1
Athens	134.0	131.2	119.4	105.0	98.9	105.3	68.7	75.1	82.8	79.5	76.3	74.0
Auglaize	105.1	100.7	93.4	90.0	85.6	86.8	45.1	50.6	61.5	65.8	66.8	72.0
Belmont	126.8	115.9	105.4	90.7	85.3	84.3	82.0	82.7	81.4	72.3	69.7	67.3
Brown	118.6	96.4	88.3	87.2	78.0	73.8	71.3	67.6	66.7	70.0	67.0	63.7
Butler	128.6	120.7	111.3	106.8	102.9	107.0	86.8	94.7	90.2	89.8	83.0	87.0
Carroll	131.4	135.0	118.7	108.4	105.6	110.5	90.9	97.0	92.8	89.3	86.7	89.9
Champaign	146.4	128.5	112.7	106.9	105.9	104.1	90.1	84.8	86.1	80.9	86.0	89.7
Clark	149.7	135.8	122.0	107.0	103.4	95.4	101 8	103.2	98.3	90.7	85.3	82.3
Clermont	103.3	82.5	81.3	73.3	66.8	70.7	64.5	62.2	66.2	62.0	56.7	58.8
Clinton	110.9	114.7	113.0	98.9	101.6	100.7	72.6	82.0	90.6	79.8	89.1	89.4
Columbiana	118.1	100.6	93.3	88.2	84.2	79.6	77.7	73.4	71.3	69.7	65.2	60.9
Coshocton	153.0	131.5	119.3	110.0	103.2	107.4	92.8	87.0	89.5	87.2	83.1	86.5
Crawford	113.3	113.8	100.2	101.2	94.3	98.4	70.3	79.3	76.0	82.1	76.7	82.3
Cuyahoga	74.8	69.0	64.0	58.3	52.0	48.5	54.7	56.9	53.6	48.5	31.5	34.4
Darke	107.2	97.4	80.7	75.8	69.0	67.6	56.0	57.0	56.2	60.1	58.1	59.2
Defiance	131.1	98.0	97.3	91.9	88.7	93.9	46.8	46.9	54.0	60.0	63.9	71.5
Delaware	123.2	106.5	93.9	92.8	90.1	90.0	74.1	74.5	71.6	76.8	74.8	74.9
Erie	102.9	80.9	78.0	77.0	75.3	73.8	75.2	68.9	66.4	68.8	62.5	60.8
Fairfield	128.7	131.8	99.4	93.7	90.1	88.4	86.6	91.5	77.5	78.2	77.7	76.6
Fayette	204.6	135.8	126.4	129.5	127.0	135.0	158.3	100.6	104.8	114.3	115.3	127.0
Franklin	109.1	106.0	83.0	88.4	84.1	79.7	72.8	78.4	67.0	77.4	75.0	72.1
Fulton	102.4	104.0	81.4	78.9	75.5	78.8	50.5	55.0	52.4	58.6	59.8	65.1
Gallia	144.0	128.4	101.8	96.0	83.1	84.9	68.9	76.1	72.0	74.7	67.3	66.2
Geauga	135.0	111.6	104.4	100.0	97.9	93.0	98.4	90.0	82.9	78.4	54.2	53.5
Greene	141.0	128.8	102.8	103.0	97.1	100.5	92.9	93.4	81.1	86.5	81.3	85.7
Guernsey	97.0	137.0	122.7	107.9	100.4	102.2	87.4	92.5	95.4	86.6	82.2	83.3
Hamilton	67.3	60.4	53.1	56.2	49.6	47.9	46.7	47.7	44.7	47.5	38.8	37.0
Hancock	122.2	116.2	102.2	101.8	98.8	96.7	63.2	65.8	65.6	77.1	79.1	81.3
Hardin	121.7	123.4	99.9	96.8	89.5	88.2	55.4	63.9	61.4	73.6	71.9	74 7
Harrison	149.7	145.5	136.9	113.5	103.7	108.8	102.0	107.9	112.6	93.5	87.0	89.6
Henry	107.9	97.0	78.5	76.2	74.9	84.0	37.4	37.9	45.4	52.8	60.2	71.6
Highland	144.3	126.7	108.6	100.3	102.8	98.0	89.9	90.3	82.8	87.8	86.6	84.3
Hocking	115.6	122.9	119.5	115.7	108.3	113.8	55.0	68.1	82.6	83.0	79.6	79.8
Holmes	112.2	125 3	102.3	93.9	96.3	99.4	71.6	82.0	74.5	74.7	74.5	76.4
Huron	92.3	103.8	97.2	92.5	96.9	99.4	63.8	77.6	80.6	75.0	76.5	79.8
Jackson	121.9	125.9	121.8	120.0	112.7	108.8	64.6	79.9	87.0	89.2	88.5	79 0
Jefferson	152.8	143.7	125.9	126.1	122.8	115.6	97.7	98.2	89.4	94.2	86.2	79.8
Knox	126.7	105.5	97.6	98.0	95.2	99.2	81.8	76.6	76.5	80.4	78.1	82.3
Lake	99.6	83.0	90.0	75.1	69.5	67.2	76.6	63.2	71.8	60.0	49.8	47.5

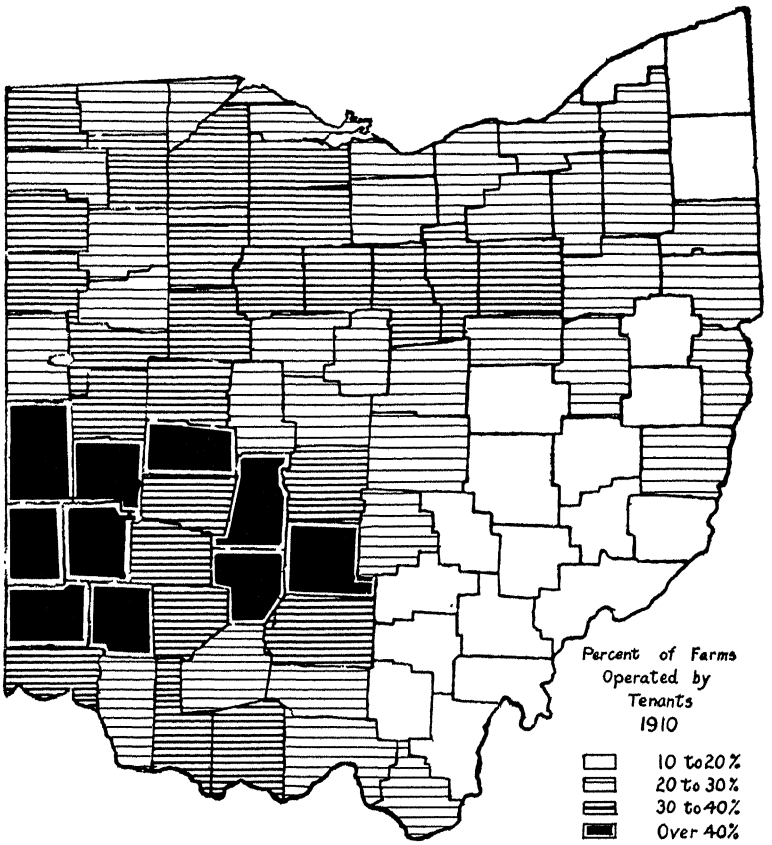
AVERAGE SIZE OF FARMS IN OHIO COUNTIES, 1860-1910—(Concluded)

	Total farm area—(Acres)						Area of improved land—(Acres)					
	1860	1870	1880	1890	1900	1910	1860	1870	1880	1890	1900	1910
Lawrence	125.6	127.7	120.6	93.4	71.3	69.8	56.8	60.3	60.5	61.0	48.5	45.5
Licking	96.2	140.4	114.4	104.2	93.5	96 3	83.2	103.5	93.4	87.3	79.2	83.1
Logan	120.1	128.1	107.7	100.6	91.4	96.7	68.7	76.5	74.6	77.2	71.4	78.4
Lorain	88.1	92.3	92.8	82.5	80.9	79.7	60.6	70.9	76.8	68.4	60.8	65.0
Lucas	84.1	75.2	69.3	67.9	59.5	59.4	41.8	42.8	48.0	49.8	46.7	49.4
Madison	242.8	174.8	121.7	142.5	152.7	156.3	174.8	139.9	102.8	124.2	132.7	143.9
Mahoning	106.4	100.5	88.5	85.0	81.7	77.7	74.9	74.5	68.0	66.4	57.7	54.4
Marion	142.8	132.3	120.6	110.1	108.3	113.2	87.7	88.8	95.5	91.6	92.7	101.2
Medina	93.7	91.7	86.7	83.4	85.9	80.7	67.0	71.2	70.0	68.3	64.7	60.3
Meigs	130.1	103.5	98.4	85.0	80.8	83.6	64.3	57.2	69.4	65.4	63.3	63.4
Mercer	98.4	94.4	94.3	89.5	83.6	86 4	42.4	45.6	56.1	62.2	66.0	72.2
Miami	110.3	103.0	91.7	86.3	83.4	74.4	69.1	73.2	72.0	74.7	73.3	66.5
Monroe	97.4	95.4	95.1	91.7	80.8	82.6	51.9	57.2	65.4	68.4	61.5	61.3
Montgomery	98.4	92.4	76.8	68.9	63.0	53.7	66.4	67.9	61.6	58.7	52.6	46.2
Morgan	115.5	110.0	117.4	100.3	95.1	95.9	65.9	72.0	88.3	79.6	77.6	76.6
Morrow	111.1	99.1	95.2	88.9	91.1	90.9	68.9	68.8	72.6	73.1	71.3	73.7
Muskingum	154.4	133.5	117.6	108.9	102.0	102.7	98.5	91.7	91.7	88.4	84.0	84.0
Noble	119.4	113.2	107.2	96.2	87.9	89.3	69.4	78.8	81.7	79.7	75.8	77.8
Ottawa	104.0	79.0	68.8	63.0	67.0	66.3	49.9	35.8	40.6	46.9	51.2	54.6
Paulding	105.6	108.7	80.4	67.6	65.6	90.0	34.8	36.9	36.0	37.7	49.9	77.7
Perry	126.9	129.3	123.2	102.9	96.5	93.5	79.4	91.3	99.0	82.6	77.3	71.6
Pickaway	140.6	152.4	140.8	125.5	127.5	134.6	103.2	115.6	115.9	110.2	105.8	123.1
Pike	166.3	131.3	134.7	113.8	101.9	110.7	74.0	67.8	80.0	69.7	60.5	62.3
Portage	110.5	106.8	93.5	87.2	85.5	82.3	83.1	80.9	72.4	67.9	58.7	51.5
Preble	160.0	119.1	102.6	92.8	85.7	80.3	89.4	81.1	75.4	73.5	69.8	68.0
Putnam	124.6	102.5	89.0	80.5	80.8	84.3	46.1	46.1	50.0	55.8	65.0	72.9
Richland	111.6	123.2	99.1	92.6	89.0	92.9	72.9	76.4	74.4	73.2	70.0	72.4
Ross	185.2	189.6	143.7	128.3	122.8	125.6	113.8	125.4	102.6	94.6	93.0	90.7
Sandusky	107.9	92.3	86.0	82.7	87.0	83.9	65.3	57.9	62.3	66.0	70.0	70.0
Scioto	134.7	117.3	125.1	114.2	107.8	95.4	69.2	59.6	62.6	58.6	70.1	47.8
Seneca	110.2	108.2	105.1	104.5	97.7	100.7	66.8	73.7	77.9	84.3	75.9	83.9
Shelby	111.3	97.5	95.2	88.5	88.2	91.1	52.6	54.6	63.9	67.5	70.8	77.0
Stark	115.8	99.9	83.2	80.1	76.1	69.1	79.6	76.2	68.1	68.6	62.5	56.7
Summit	107.3	101.0	91.0	83.2	83.2	76.9	79.8	77.7	74.0	67.8	56.4	55.2
Trumbull	115.3	107.8	101.7	91.1	86.9	82.1	79.5	78.9	79.6	76.1	55.2	56.8
Tuscarawas	124.8	120 3	113.7	100.1	94.9	91.5	82.6	85.3	88.9	80.6	76.8	73.4
Union	118.6	122.3	94.8	93.3	94.0	97.0	69.8	74.5	68.6	77.2	77.4	85.4
Van Wert	101.0	101.7	93.6	78.8	76.0	85.8	39.0	43.8	53.6	54.7	62.8	75.0
Vinton	181.9	140.3	125.2	116.7	108.4	118.7	73.0	77.8	82.3	79.4	69.6	76.0
Warren	148.4	114.9	100.2	103.4	99.4	93.0	101.3	86.1	79.7	85.1	83.7	76.6
Washington	.....	102.4	81.6	87.3	83.7	88.0	.....	57.1	59.3	62.2	62.6	61.6
Wayne	130.3	103.8	87.9	88.0	85.8	85.2	98.5	76.7	67.2	71.5	69.0	68.2
Williams	108.6	94.1	85.7	83.8	89.4	89.3	52.9	51.3	55.9	62.7	68.6	71.5
Wood	99.9	86.9	74.6	74.1	76.9	82.6	42.6	45.6	46.4	54.5	62.1	70.8
Wyandot	151.0	131.9	108.1	104.5	103.9	104.3	83.6	87.6	79.1	86.4	87.1	90.0

FARMS OPERATED BY TENANTS

	Percent
1880	19.3
1890	22.9
1900	27.4
1910	28.4

In 1910, 28.4 percent of Ohio farms were operated by tenants. In Miami County 51.7 percent of all farms were so operated, in Jackson County 11.8 percent. Other counties varied between these two extremes. It is evident that the percentage of tenancy is highest in regions of high land values. (See table, page 197.)



FARMS OPERATED BY TENANTS

	1880	1890	1900	1910
	Percent	*Percent*	*Percent*	*Percent*
The State	19.3	22.9	27.4	28.4
Adams	18.4	20.7	30.2	34.0
Allen	18.9	26.1	25.5	29.6
Ashland	19.1	25.3	30.7	34.7
Ashtabula	11.1	14.4	18.5	17.2
Athens	12.6	14.4	21.1	18.9
Auglaize	20.0	21.4	27.7	34.0
Belmont	17.9	20.6	27.7	24.4
Brown	17.5	23.0	28.0	32.9
Butler	30.5	37.9	42.5	41.0
Carroll	12.8	18.8	19.4	17.0
Champaign	25.5	33.0	37.7	40.6
Clark	30.8	33.9	39.6	38.2
Clermont	21.8	27.8	33.8	26.9
Clinton	23.9	29.9	35.8	36.5
Columbiana	16.5	21.2	26.9	24.6
Coshocton	14.0	12.9	16.3	18.1
Crawford	20.8	24.1	28.1	32.9
Cuyahoga	17.6	20.5	23.1	21.9
Darke	27.6	29.8	39.5	46.8
Defiance	18.7	18.1	24.6	27.6
Delaware	17.5	22.6	25.5	25.4
Erie	29.0	19.5	29.1	22.4
Fairfield	22.9	25.3	26.7	26.9
Fayette	37.6	38.8	38.6	40.2
Franklin	31.8	31.3	35.1	34.3
Fulton	16.1	22.3	24.8	29.3
Gallia	11.1	13.1	17.8	16.3
Geauga	16.2	22.0	24.2	22.8
Greene	28.3	33.1	39.7	39.0
Guernsey	12.5	15.3	20.0	16.7
Hamilton	33.5	35.3	40.2	31.0
Hancock	20.1	27.5	31.5	37.4
Hardin	21.5	23.6	30.6	36.5
Harrison	12.9	14.1	20.2	19.6
Henry	18.0	24.3	28.9	31.8
Highland	16.9	20.9	24.3	28.0
Hocking	11.5	12.0	19.9	18.4
Holmes	17.9	19.3	22.5	24.0
Huron	13.8	18.6	25.0	25.7
Jackson	6.1	10.9	10.7	11.8
Jefferson	16.0	18.6	27.3	27.7
Knox	16.1	20.4	20.9	25.2
Lake	12.1	14.0	17.8	18.4

FARMS OPERATED BY TENANTS—Concluded

	1880	1890	1900	1910
	Percent	*Percent*	*Percent*	*Percent*
Lawrence	14.6	16.9	25.4	21.7
Licking	16.1	18.2	21.5	23.9
Logan	20.0	25.1	32.6	32.4
Lorain	13.5	18.1	20.9	22.2
Lucas	22.7	29.7	30.8	28.2
Madison	51.7	49.6	47.8	46.8
Mahoning	16.8	18.0	21.9	20.1
Marion	25.7	28.0	30.4	34.2
Medina	16.5	20.1	23.8	23.1
Meigs	12.4	12.0	15.8	13.3
Mercer	17.6	22.5	26.3	28.6
Miami	32.4	38.0	46.8	51.7
Monroe	12.1	12.9	16.3	18.3
Montgomery	28.0	34.9	42.4	42.3
Morgan	9.7	11.9	17.1	15.1
Morrow	11.8	20.8	23.5	28.3
Muskingum	11.2	16.9	21.5	17.2
Noble	14.7	13.3	15.6	16.7
Ottawa	16.1	17.7	19.4	20.9
Paulding	17.8	19.7	33.6	34.3
Perry	10.9	20.0	15.9	17.9
Pickaway	32.8	40.9	43.4	43.9
Pike	16.6	14.8	22.1	21.0
Portage	11.6	18.2	22.5	21.3
Preble	30.5	30.4	37.1	44.8
Putnam	16.3	19.0	25.0	28.3
Richland	23.0	24.7	26.6	32.2
Ross	19.0	26.5	29.9	32.5
Sandusky	24.2	28.7	34.0	35.7
Scioto	15.1	18.8	21.9	25.1
Seneca	24.3	28.9	33.8	38.3
Shelby	19.3	32.2	35.6	39.7
Stark	20.0	25.3	29.9	26.4
Summit	21.1	23.6	29.3	26.3
Trumbull	14.4	17.1	19.5	17.2
Tuscarawas	17.4	19.2	21.3	20.1
Union	18.5	26.2	28.0	27.0
Van Wert	17.9	17.9	29.0	31.9
Vinton	13.2	10.8	17.1	12.8
Warren	29.9	36.9	41.0	43.1
Washington	13.2	14.6	16.9	16.7
Wayne	24.1	28.6	30.9	33.6
Williams	16.0	22.0	27.3	32.2
Wood	19.2	27.5	35.0	39.1
Wyandot	18.6	24.3	28.5	32.4

DEVELOPMENT OF LAND VALUES

AVERAGE VALUE OF FARM LAND AND IMPROVEMENTS PER ACRE

	Dollars
1850	19.93
1860	33.12
1870	39.67
1880	45.96
1890	44.96
1900	42.28
1910	68.62

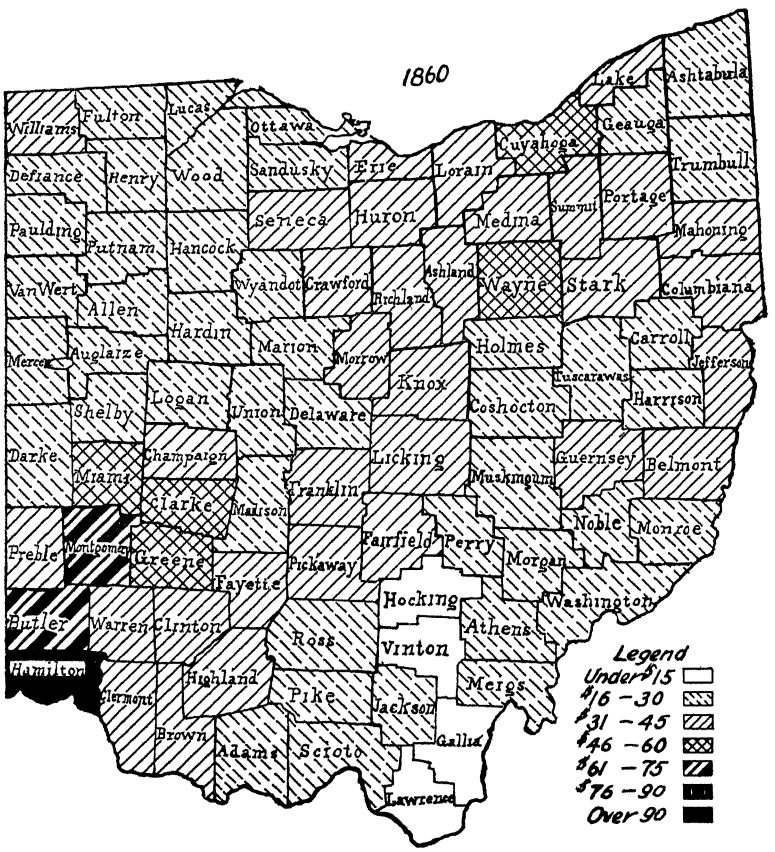
Three periods of land fluctuation.—The fluctuation in the value of Ohio farm lands from 1850 to 1910 may well be divided into three periods: 1, The period extending to 1880, marked by a steady rise in land values. 2, The period from 1880 to 1897, marked by a general decline in land values. 3, The period since 1897, characterized by a rise in land values.

DEVELOPMENT OF LAND VALUES—1850
AVERAGE VALUE

The selling price of farm land is influenced by many factors, chief among which are its productive capacity, the degree of improvement, the period of settlement, and the price of farm products. Competition with land further west has been an important factor in influencing the past history of Ohio land values. The development of the northwestern counties of the State from a wooded swamp to a region of productive farm land has been another incident occurring within this period, 1850 to 1910.

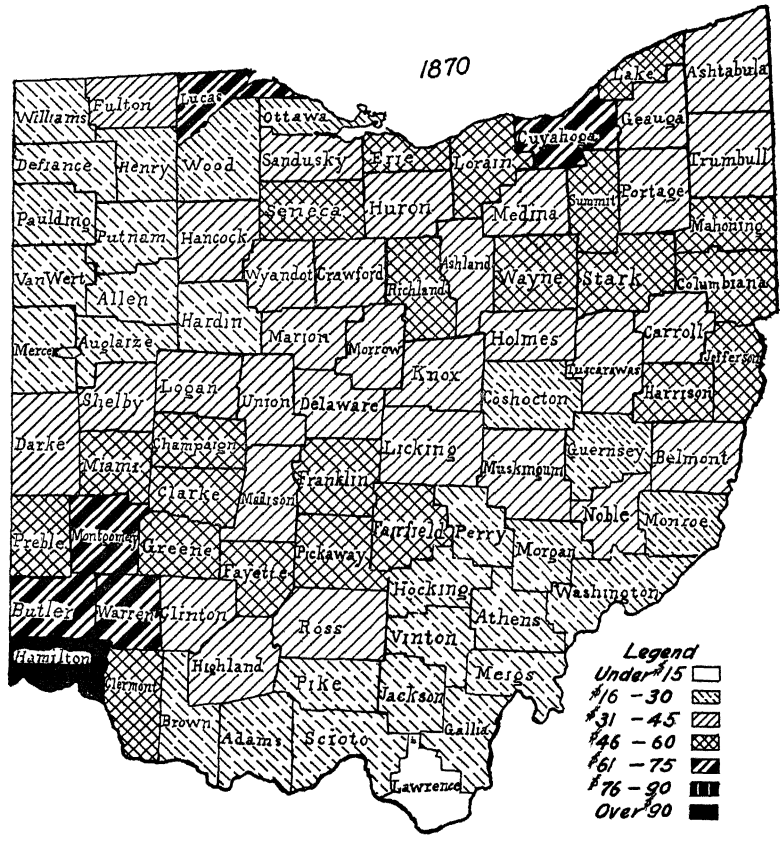
Best Ohio land was once low-priced.—The northwestern counties in 1850 had the lowest-priced farm land in the State. The average value of land in farms in these counties at that time was less than $15 per acre. It had been only recently that settlers in

DEVELOPMENT OF LAND VALUES—1860
AVERAGE VALUE



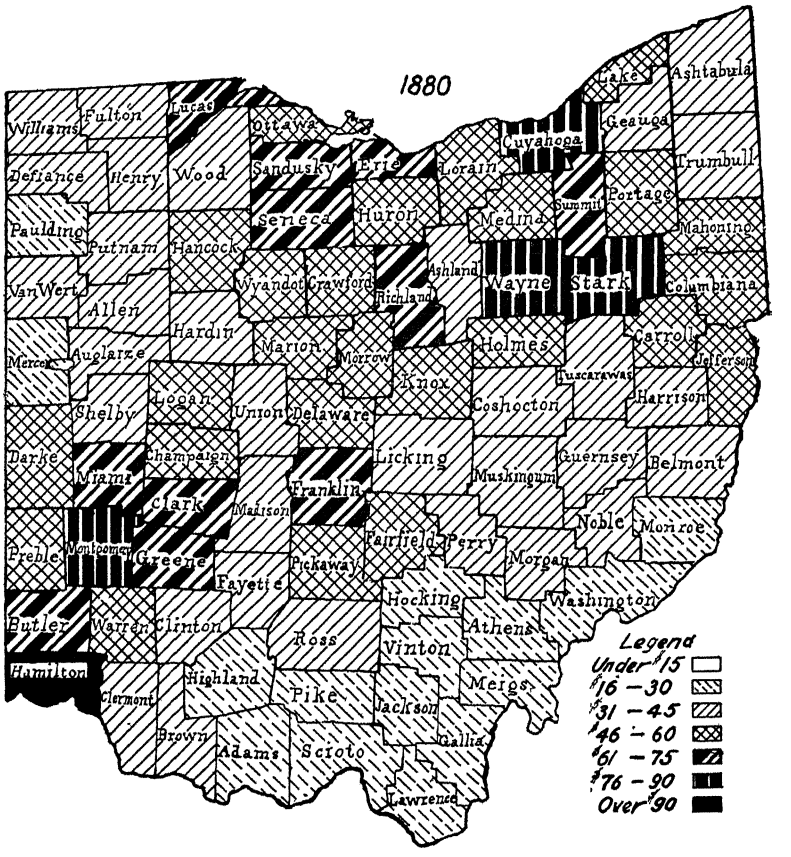
very great numbers had been attracted to these counties. A resident of Paulding County in that year writes: "We have some fine land at from 84 cents to $2.50 per acre. We have had an increase of some 50 to 60 families during the last year." Another from Defiance County reports, "The main evidences of improvement are the rapid purchase of our wild land by actual settlers, frequent invitation to log cabin raisings, the flames of brush piles, and the smoke of log heaps." In the older and better-developed region of the northeastern counties, the average value of farm land was less than $25 per acre. Only four counties in the State reported an average value of more than $30 per acre. From 1850 to 1860 the area of improved land in farms in the State increased from a total of 9,850,000 acres to 12,625,000 acres.

DEVELOPMENT OF LAND VALUES—1870
AVERAGE VALUE



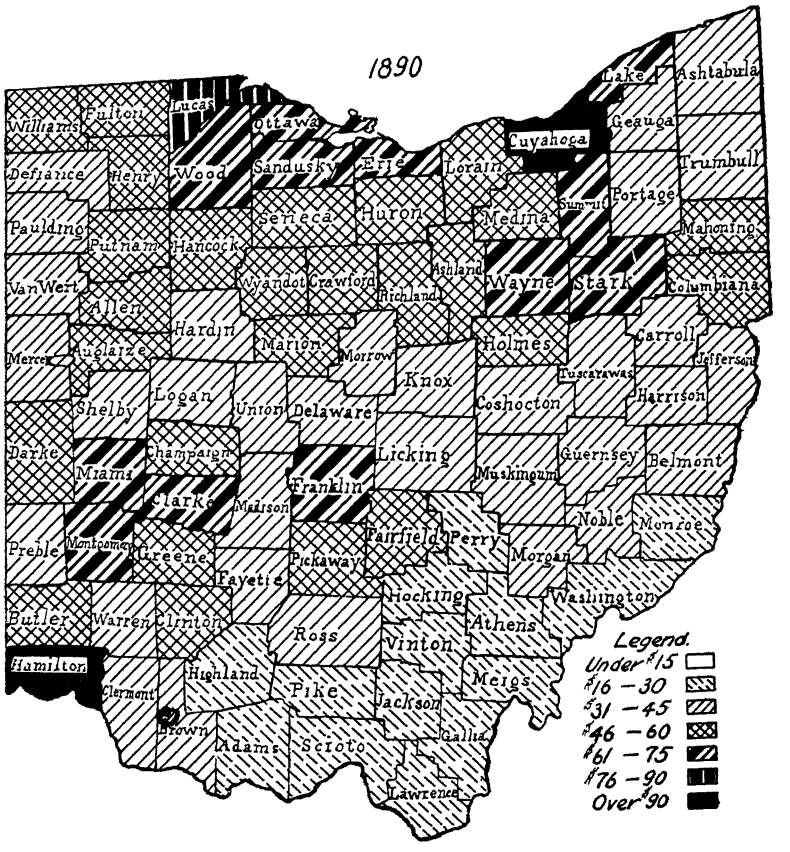
Railroads brought increase in land values.—The period from 1850 to 1860 marked a decade of prosperity for Ohio agriculture. Crops were generally good and prices were good. Railroads were being rapidly built, new markets were being opened. The farm price received for agricultural products rose accordingly. Improved farm machinery was being rapidly developed and adopted, this was increasing the productive capacity of the farmers. The decade of the 'fifties witnessed a uniformly rapid rise in land values. Every county save one showed an increase. The average value of land in farms for the State as a whole advanced from $19.23 per acre in 1850 to $33.12 in 1860. This was an average increase of nearly $14 per acre; a greater increase for the State as a whole than occurred in the succeeding 40 years according to the census values. Immigrants from the eastern states and from foreign countries continued

DEVELOPMENT OF LAND VALUES—1880
AVERAGE VALUE



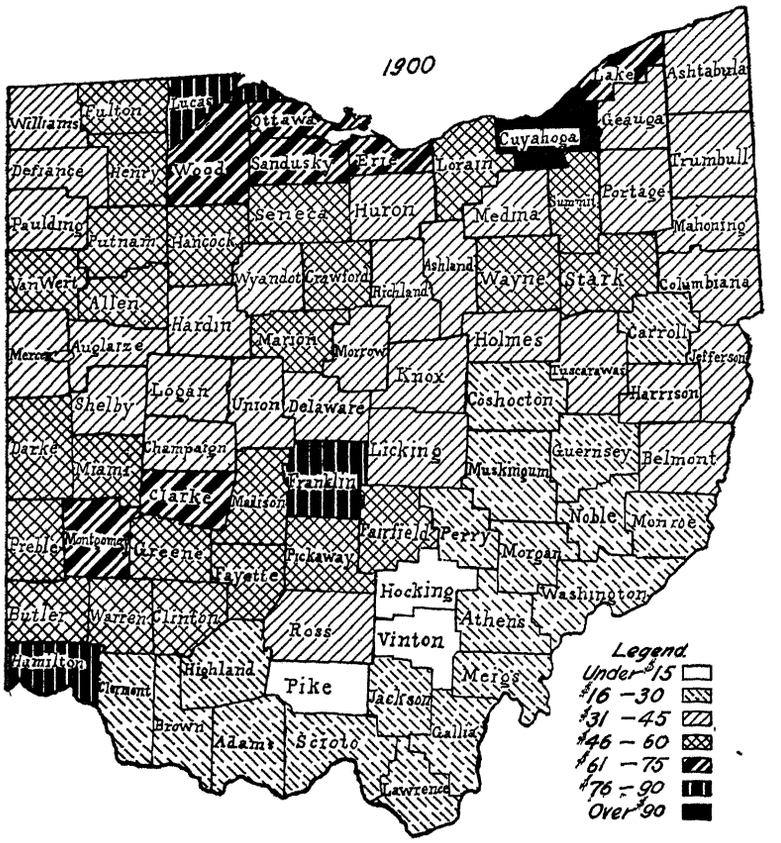
to settle on Ohio farms. Nor did the Civil War check to any great degree the rising land values. High prices for farm products and good yields continued during the 'sixties. Every county in the State, with the exception of nine southern counties, showed an increase in land values. During the 'seventies the general rise of land values continued, in the northern counties as rapidly as during the previous decade, but in the southern counties at a diminished rate. During the first half of the 'seventies land values rose steadily, but low prices during the later years of the decade materially checked the rise in values. Better prices during the early 'eighties helped to revive the tendency for land values to rise. But following 1883 a decline in land values set in.

DEVELOPMENT OF LAND VALUES—1890
AVERAGE VALUE



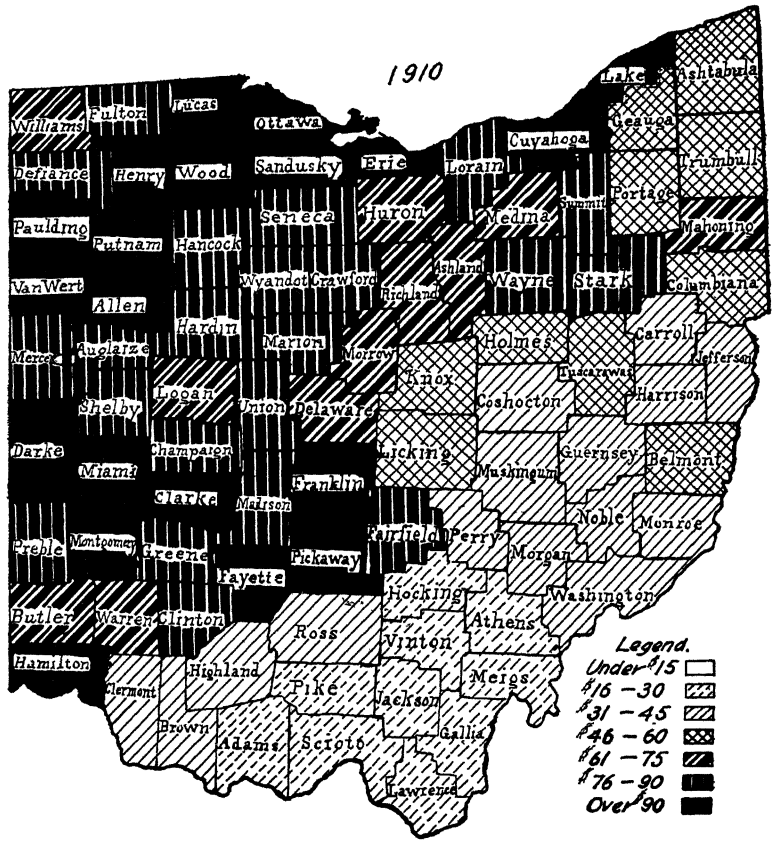
Period of decline.—The period from about 1880 to 1900 was characterized by a general decline in land values within the State. Through all the years from 1885 to 1896 were heard the murmurs of discontent on the part of farmers. The prices of farm products were low; land values fell accordingly. There were probably many causes contributing to this depressed condition, but prominent among these was doubtless the flooding of the market with farm products from the West. During the 'fifties and 'sixties the extension of railroads had done much to improve the market for Ohio farm products. Following the Civil War, however, the railroads were pushed rapidly westward into new territory with cheaper land. Migration westward went forward at an increased rate following the construction of the railroads. Between the years 1883 and 1896 the

DEVELOPMENT OF LAND VALUES—1900
AVERAGE VALUE



Federal government by patents to states and railroads, homesteaders and other settlers, and by sale disposed of over 300,000,000 acres of the public land. All of this lay west of Ohio. The fertile, level prairie fields of Illinois and Iowa were adapted to the use of the binder and other farm machinery which had now been developed. Cattle and sheep were being herded in large numbers on the open, semi-arid lands of the West. The railroads brought these cheap western products to the eastern markets. The result was a decided fall in prices. During this period Ohio pork sold as low as 3 cents per pound, beef at 2 cents, corn at 25 cents per bushel and wheat at 50 cents. Thus was Ohio agriculture in its turn made to suffer from the effects of western competition, just as that of the older eastern states had previously been made to feel the effect of competition from Ohio.

DEVELOPMENT OF LAND VALUES—1910
AVERAGE VALUE



By the middle of the 'eighties land values were declining. By 1890 nearly one-half of the counties showed a decline in average land values for the previous decade. From 1890 to 1900 the decrease in value was even more marked than during the preceding decade. During the first 6 years of the period the decline was great; from 1897 to 1900 land values remained practically stationary. Only fifteen counties showed an increase in average land values for the decade. All except three of these, Cuyahoga, Lake and Geauga, were in western Ohio. The only section of the State where land values continued to rise during the 20 years from 1880 to 1900 was in some of the northwestern counties. In this section clearing, stump pulling, ditching and drainage were repidly improving the productive capacity of the land. The petition for the con-

INCREASE OR DECREASE IN LAND VALUES

struction of the first drainage ditch in Wood County was filed in 1859. It was not until after 1880 that tile began to be laid extensively. Were it not for the improvements in farm lands and consequent rise in values in the northwestern counties the average value of farm land for the State as a whole would have shown a much greater decrease during these two decades.

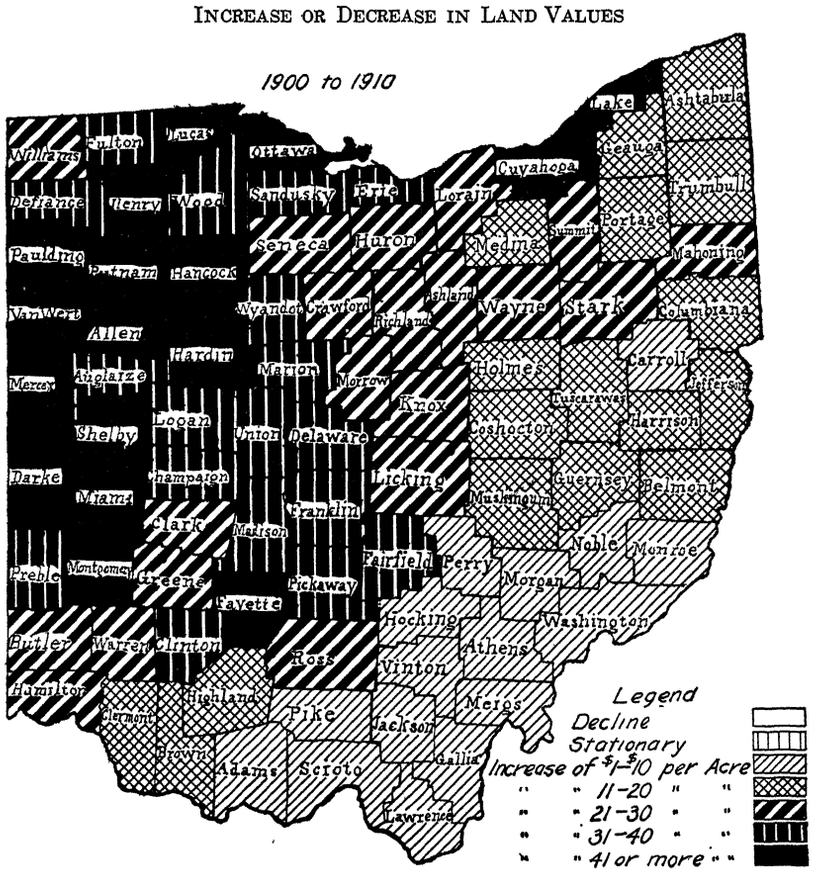
Increase noticed by 1900.—By 1900 land values in Ohio had again begun to increase. Since 1902 the increase has been rapid. The disappearance of free land in the West and our rapidly increasing city population, have been accompanied by a rise in the prices of farm products and a corresponding rise in land values. From 1900 to 1910 Ohio farm lands rose from an average value of $42.28 per acre to $68.62 per acre, an increase of over 62 percent—a greater

INCREASE OR DECREASE IN LAND VALUES

increase than had occurred during the preceding 50 years. Every county of the State showed an increase in land values. The advance was especially rapid in the western half of the State, and more especially in the northwestern counties. The improvement of land by drainage and the construction of improvements did much to advance its value.

The census of 1910 gives fourteen Ohio counties having an average land value of more than $100 per acre. Several of these, as Van Wert and Putnam, showed an increase of over 100 percent in value during the 10-year period. A study of prices and land values in the older sections of the State would show that since 1880 Ohio land values have fluctuated directly in relation to the price received for their products.

INCREASE OR DECREASE IN LAND VALUES



VALUE OF LAND AND IMPROVEMENTS PER ACRE IN OHIO BY COUNTIES—1850-1910

	1850	1860	1870	1880	1890	1900	1910
The State	$19.93	$33.12	$38.85	$45.97	$44.96	$42.31	$68.62
Adams	13.00	19.00	16.00	17.00	18.00	16.00	25.50
Allen	12.00	24.00	29.00	44.00	55.00	48.00	94.66
Ashland	21.00	37.00	44.00	44.00	55.00	40.00	61.81
Ashtabula	11.00	27.00	34.00	35.00	36.00	32.00	47.40
Athens	11.00	19.00	21.00	25.00	26.00	25.00	29.44
Auglaize	9.00	20.00	28.00	37.00	46.00	45.00	83.96
Belmont	23.00	32.00	43.00	43.00	42.00	34.00	52.18
Brown	22.00	31.00	27 00	33.00	33.00	30.00	41.53
Butler	38.00	61.00	72.00	70.00	53.00	50.00	75.36
Carroll	17.00	24.00	38.00	47.00	39.00	29.00	36.93
Champaign	20.00	38.00	49.00	55.00	50.00	45.00	81.55
Clark	27.00	47.00	56.00	61.00	64.00	62.00	91.57
Clermont	25.00	45.00	47.00	41.00	36.00	30.00	46.11
Clinton	22.00	40.00	42.00	44.00	48.00	46.00	82.11
Columbiana	22.00	33.00	47.00	52.00	46.00	44.00	55.26
Coshocton	15.00	25.00	29.00	39.00	39.00	30.00	37.15
Crawford	16.00	33.00	42.00	58.00	54.00	52.00	81.58
Cuyahoga	24.00	47.00	69.00	81.00	99.00	120.00	205.84
Darke	10.00	27.00	35.00	47.00	51.00	52.00	101.33
Defiance	11.00	18.00	26.00	36.00	45.00	42 00	80.86
Delaware	16.00	21.00	42.00	47.00	45.00	40.00	71.90
Erie	24.00	37.00	66.00	72.00	74.00	64.00	98.54
Fairfield	22.00	36.00	46.00	51 00	52.00	46.00	77.35
Fayette	17.00	37.00	51.00	44.00	45.00	55.00	95.63
Franklin	24.00	45.00	54.00	71.00	70.00	82.00	114.59
Fulton	11.00	22.00	34.00	45.00	50.00	50.00	89.78
Gallia	9.00	15.00	20.00	22 00	17.00	19.00	21.43
Geauga	16.00	28.00	37.00	38.00	32.00	34.00	49.84
Greene	25.00	49.00	51.00	68.00	56.00	53.00	83.03
Guernsey	14.00	33.00	29.00	31.00	29.00	24.00	35.51
Hamilton	83.00	98.00	113.00	108.00	106.00	90.00	115.76
Hancock	12.00	27.00	33.00	54.00	57.00	50.00	96.15
Hardin	11.00	22.00	25.00	40.00	43.00	43.00	85.57
Harrison	21.00	30.00	46.00	40.00	41.00	32.00	45.63
Henry	8.00	16.00	25.00	41.00	49.00	54.00	102.35
Highland	19.00	33.00	32.00	29.00	25.00	30.00	45.69
Hocking	9.00	15.00	19.00	20.00	20.00	15.00	22.51
Holmes	17.00	30.00	36.00	57.00	51.00	40.00	57.17
Huron	21.00	36.00	42.00	57.00	50.00	43.00	72.12
Jackson	9.00	16.00	20.00	20.00	16.00	16.00	19.79
Jefferson	31.00	35.00	50.00	48.00	42.00	32.00	43.01
Knox	19.00	33.00	42.00	52.00	44.00	35.00	60.15
Lake	23.00	40.00	56.00	56.00	65.00	73.00	121.46

VALUE OF LAND AND IMPROVEMENTS PER ACRE IN OHIO BY COUNTIES—1850-1910.—Concluded

	1850	1860	1870	1880	1890	1900	1910
Lawrence	10.00	15.00	15.00	18.00	19.00	19.00	23.74
Licking	12.00	42.00	43.00	45.00	37.00	37.00	58.97
Logan	16.00	30.00	37.00	46.00	43.00	37.00	69.40
Lorain	19.00	31.00	47.00	48.00	56.00	52.00	76.54
Lucas	14.00	29.00	62.00	62.00	78.00	81.00	126.19
Madison	14.00	30.00	39.00	43.00	45.00	50.00	86.33
Mahoning	24.00	39.00	47.00	53.00	49.00	44.00	70.73
Marion	12.00	28.00	31.00	47.00	47.00	46.00	85.95
Medina	21.00	34.00	43.00	53.00	51.00	44.00	62.22
Meigs	11.00	21.00	24.00	22.00	24.00	20.00	25.81
Mercer	9.00	18.00	20.00	29.00	42.00	42.00	90.49
Miami	25.00	47.00	58.00	70.00	68.00	58.00	102.23
Monroe	10.00	19.00	19.00	25.00	26.00	26.00	31.62
Montgomery	30.00	66.00	69.00	84.00	74.00	71.00	128.36
Morgan	16.00	24.00	27.00	32.00	31.00	25.00	31.47
Morrow	16.00	31.00	42.00	54.00	42.00	38.00	62.29
Muskingum	22.00	28.00	33.00	36.00	34.00	26.00	37.73
Noble	13.00	22.00	32.00	35.00	33.00	27.00	37.60
Ottawa	11.00	29.00	26.00	58.00	66.00	72.00	113.56
Paulding	12.00	12.00	16.00	21.00	36.00	38.00	99.29
Perry	17.00	24.00	30.00	35.00	29.00	27.00	34.83
Pickaway	22.00	43.00	51.00	49.00	47.00	54.00	93.57
Pike	12.00	19.00	16.00	16.00	16.00	15.00	21.56
Portage	22.00	36.00	43.00	51.00	45.00	43.00	56.77
Preble	24.00	42.00	47.00	51.00	43.00	49.00	84.56
Putnam	10.00	18.00	24.00	38.00	50.00	50.00	105.11
Richland	22.00	39.00	48.00	61.00	47.00	40.00	64.80
Ross	23.00	24.00	34.00	37.00	35.00	33.00	56.19
Sandusky	15.00	30.00	44.00	66.00	69.00	70.00	100.89
Scioto	17.00	21.00	20.00	16.00	16.00	16.00	25.61
Seneca	20.00	34.00	46.00	64.00	53.00	55.00	85.98
Shelby	14.00	24.00	31.00	37.00	43.00	40.00	82.55
Stark	26.00	43.00	58.00	78.00	65.00	58.00	87.86
Summit	24.00	41.00	53.00	64.00	65.00	57.00	82.99
Trumbull	20.00	29.00	39.00	41.00	37.00	37.00	54.21
Tuscarawas	16.00	25.00	38.00	43.00	45.00	36.00	48.72
Union	12.00	22.00	38.00	40.00	45.00	42.00	76.82
Van Wert	8.00	16.00	22.00	33.00	45.00	47.00	100.22
Vinton	9.00	13.00	16.00	16.00	17.00	13.00	15.75
Warren	36.00	44.00	61.00	57.00	41.00	47.00	69.42
Washington	11.00	28.00	25.00	28 00	26.00	26.00	33.67
Wayne	28.00	46.00	57.00	80.00	65.00	54.00	79.11
Williams	10.00	43.00	29.00	41.00	49.00	43.00	72.63
Wood	10.00	21.00	30.00	45.00	62.00	63.00	102.95
Wyandot	13.00	27.00	36.00	46.00	50.00	45.00	82.11

PRICES

At the beginning of the period under consideration the prices of farm products were rising. The high prices of 1854 and 1856 were undoubtedly due to the severe drouths of those years, while in 1858 there were crop failures due to heavy rains. The lower prices of 1855 and 1860 were in part the result of large crop yields, while the fall of prices in 1857 was due to a crisis and depression in the financial world. From the period of the Civil War to the middle of the 'seventies was a period of high prices. Wheat sold in May, 1867, for $3.50 per bushel on the Cincinnati market, and for the year beginning August, 1866, the price averaged $1.99 per bushel. The high prices of the Civil War period, however, were largely the result of the depreciation of the currency. Fine wool was quoted at 80, 78 and 80 cents per pound on April 1, 1863-64-65; reduced to a gold basis these prices were 53, 45 and 54 cents. Following the resumption of species payment and the improvement of business conditions the prices of farm products rose until 1881 which was a bountiful year for the Ohio farmer. From 1885 to 1900 the prices of Ohio farm products were ruinously low. Farm products from the West were flooding the eastern markets. Since 1900 there has been a gradual rise of prices, and by 1906 the increased prosperity of agriculture, due to better prices, was a subject of comment.

The data given in the table concerning the average annual wholesale prices for representative farm products, except wool, were taken from the Annual Reports of the Cincinnati Chamber of Commerce, 1875 to 1915, and are the wholesale prices for those products upon the Cincinnati market. Up to and including 1891-92 the prices are for the commercial year ending August 31, since then for the calendar year. While the grades have varied somewhat during this period they are approximately as follows: Corn, No. 2, mixed; oats, No. 2, mixed; wheat, No. 2, red winter; hay No. 1, timothy; cattle, fair to medium butchers; hogs, average of packing grades; sheep, good to extra; cheese, Ohio; butter, choice dairy. The prices for wool (Mager & Avery's) represent average prices paid in April for fine-washed Ohio wool at Boston. In computing the average relative price only the unweighted average of which is given in the table, the years 1890-1899 were used as a base period, the average relative price of that period being 100. The prices given here are wholesale prices, not the farm prices. In the early years farm prices varied widely in accordance with the distance from market.

AVERAGE ANNUAL WHOLESALE PRICES AND UNWEIGHTED RELATIVE PRICES OF OHIO FARM PRODUCTS, 1850-1910

Year	Hogs per cwt.	Cattle per cwt.	Sheep per cwt.	Wool per lb.	Butter per lb.	Cheese per lb.	Corn per bu.	Wheat per bu.	Oats per bu.	Hay per ton	Average relative price 1890-99=100
1850	$3.20	.....	.....	$0.45	.....	.....	$0.39	$0.70	.....	.....	109.3
1851	3.76	.....	.....	.50	.....	.....	.31	.61	.....	.....	109.6
1852	5.05	.....	.....	.42	.....	.....	.42	.74	.....	.....	118.9
1853	3.56	.....	.....	.62	.....	.....	.48	1.19	.....	.....	151.6
1854	3.57	.....	.....	.57	.....	.....	.67	1.55	.....	.....	168.3
1855	4.84	$3.87	.....	.43	.....	$0.097	.42	1.27	$0.30	$14.71	124.2
1856	4.99	4.57	.....	.57	.....	.101	.59	1.18	.46	21.00	152.2
1857	4.13	3.78	.....	.60	$0.150	.081	.42	.77	.36	13.46	120.1
1858	5.27	4.88	.....	.42	.190	.082	.72	1.15	.57	15.38	145.2
1859	4.97	3.90	.....	.60	.143	.085	.50	1.17	.43	17.73	137.7
1860	4.78	3.30	.....	.52	.132	.078	.34	.93	.27	12.62	110.9
1861	2.63	3.24	.....	.45	.125	.063	.31	.86	.30	11.85	98.3
1862	3.56	3.96	.....	.46	.185	.104	.53	1.04	.58	16.34	136.6
1863	5.60	5.74	.....	.80	.290	.140	1.04	1.42	.79	27.16	213.4
1864	11.70	7.45	.....	.78	.350	.197	.78	1.79	.53	26.00	232.7
1865	9.57	7.55	.....	.80	.363	.193	.54	2.27	.57	12.63	217.6
1866	6.02	7.28	.....	.65	.265	.117	.79	2.79	.57	19.76	205.6
1867	6.60	7.27	.....	.60	.365	.142	.92	2.31	.69	14.80	212.3
1868	8.42	5.63	.....	.50	.329	.165	.74	1.57	.64	16.42	191.0
1869	9.46	5.85	.....	.50	.283	.170	.83	1.15	.54	17.43	184.7
1870	5.50	5.02	.....	.48	.246	.137	.56	1.27	.46	18.45	149.2
1871	4.36	4.74	$4.41	.50	.200	.145	.49	1.58	.37	20.79	148.5
1872	3.92	4.99	4.76	.80	.232	.145	.43	1.56	.36	22.18	167.6
1873	4 58	3.90	4.50	.56	.270	.147	.60	1.38	.48	17.16	154.9
1874	6.99	4.31	4.89	.56	.253	.140	.73	1.17	.59	20.98	168.3
1875	7.28	3.96	4.75	.54	.232	.114	.52	1.10	.38	17.66	145.9
1876	5.90	3.51	4.53	.46	.187	.122	.46	1.40	.37	11.67	132.1
1877	4.20	3.04	4.07	.45	.178	.109	.43	1.11	.29	9.86	120.0
1878	2.84	2.96	4.00	.40	.138	.073	.38	.96	.27	10.79	99.5
1879	4.36	2.83	4.56	.34	.174	.115	.42	1.16	.35	15.87	122.3
1880	4.61	3.45	4.66	.55	.220	.114	.49	1.10	.38	16.36	135.5
1881	6.24	3.98	4.91	.40	.266	.114	.72	1.32	.50	17.90	153.2
1882	6.44	3.85	4.76	.42	.232	.109	.56	1.05	.39	12.39	134.0
1883	5.24	3.95	4.69	.44	.242	.096	.53	1.01	.34	11.62	129.0
1884	4.44	3.53	3.99	.38	.165	.092	.74	.89	.32	12.81	119.3
1885	3.81	3.24	4.13	.32	.141	.094	.39	.88	.30	12.16	103.4
1886	4.28	2.98	4.10	.33	.188	.112	.40	.80	.29	11.17	107.5
1887	5.18	3.04	4.58	.33	.175	.104	.52	.85	.33	14.79	119.3
1888	5.15	2.84	4.46	.31	.174	.097	.37	.93	.26	12.74	108.0
1889	3.74	2.90	4.84	.33	.135	.090	.36	.83	.27	10.56	99.8
1890	3.64	3.28	4.83	.32	.150	.096	.60	.99	.48	10.58	116.9
1891	3.90	3.17	4.79	.32	.163	.102	.48	.80	.33	11.25	116.9
1892	5.05	3.22	4 86	.29	.170	.100	.45	.81	.33	11.10	119.1
1893	6.90	3.61	4 20	.30	.190	.102	.44	.64	.32	12.55	112.2
1894	5.10	3.35	3.10	.21	.129	.096	.45	.54	.35	10.95	107.8
1895	4.35	3.85	3.30	.16	.105	.090	.41	.66	.27	12.70	91.9
1896	3.50	3.40	3.15	.19	.086	.088	.27	.72	.20	12.20	82.5
1897	3.30	3.54	3.78	.21	.096	.091	.26	.89	.21	9.80	86.0
1898	3.85	3.70	3.87	.29	.110	.087	.34	.86	.27	8.67	96.3
1899	4.05	3.85	3.77	.25	.126	.107	.36	.72	.27	10.10	96.8
1900	5.10	4.00	3.72	.32	.140	.110	.41	.75	.25	13.95	107.4
1901	5.95	3.78	3.34	.25	.120	.103	.52	.77	.34	13.60	108.9
1902	6.80	4.10	3.80	.25	.155	.116	.61	.80	.41	13.35	120.8
1903	6.05	3.50	3.80	.29	.137	.114	.47	.81	.37	15.40	115.6
1904	5.25	3.40	3.70	.33	.114	.094	.51	1.08	.38	13.00	113.4
1905	5.35	3.45	4.45	.34	.159	.126	.52	.99	.32	12.10	119.1
1906	6.40	3.60	4.65	.34	.150	.128	.48	.81	.34	15.45	122.3
1907	6.30	3.90	4.75	.34	.177	.145	.55	.89	.46	18.25	136.6
1908	5.75	4.05	4.10	.34	.176	.135	.68	.99	.51	13.50	134.6
1909	7.45	4.35	4.45	.36	.197	.133	.57	1.24	.49	14.85	143.7
1910	9.15	4.60	4.75	.34	.211	.169	.59	1.09	.34	18.50	149.8
Above prices for 1862-1878 reduced to a gold basis											
1862	3.51	3.90	.....	.450	.182	.102	.52	1.03	.57	16.11	134 6
1863	4.05	4.15	.....	.579	.209	.091	.75	1.03	.57	19.66	154.5
1864	6.87	4.37	.....	.457	.205	.116	.46	1.06	.31	15.26	139.1
1865	5.49	4.31	.....	.457	.207	.110	.31	1.30	.33	7.21	125.0
1866	4.26	5.15	.....	.460	.188	.082	.56	1.97	.40	13.99	145.6
1867	4.73	5.22	.....	.431	.262	.102	.66	1.66	.50	10.62	152.4
1868	5.99	4.00	.....	.355	.234	.117	.53	1.12	.46	11.67	135.8
1869	6.95	4.30	.....	.37	.208	.125	.61	.84	.40	12.81	135.7
1870	4.59	4.19	.....	.40	.205	.114	.47	1.06	.38	15.39	124.4
1871	3.90	4.24	3.94	.45	.178	.130	.44	1.41	.33	18.59	132.7
1872	3.50	4.45	4.25	.71	.202	.129	.38	1.39	.32	19.78	149.5
1873	3.99	3.40	3.92	.49	.235	.128	.52	1.20	.42	14.95	134.9
1874	6.30	3.88	4.41	.50	.228	.126	.66	1.05	.53	18.90	151.6
1875	6.42	3.49	4.19	.48	.205	.100	.46	.97	.34	15.28	129.2
1876	5.30	3.09	3.99	.40	.165	.107	.40	1.23	.32	10.28	116.4
1877	3.93	2.85	3.81	.42	.167	.102	.40	1.04	.27	9.23	112.3
1878	2.78	2.90	3.92	.39	.135	.072	.37	.94	.94	10.57	97.5

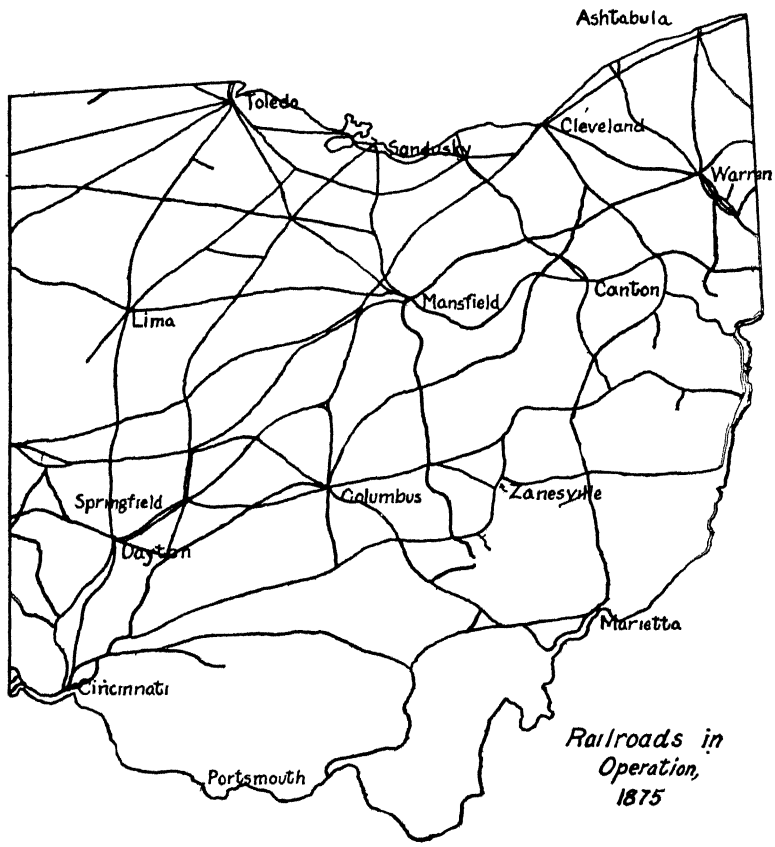
DEVELOPMENT OF RAILROADS IN OHIO

MILEAGE OF RAILROADS IN OHIO

	Miles
1840	36
1850	299
1860	2,974
1880	5,154
1900	8,691

First roads built to supplement canals.—From 1830 to 1850 the construction of canals and of railroads progressed in Ohio. The first railroad in the State, built in 1836, ran from Toledo to Adrian, Michigan. During the 'forties it was the general opinion that the railroads would be used only to supplement the canals. The first important railroad in the State and the first one chartered in Ohio was the "Mad River and Lake Erie," projected from Sandusky to

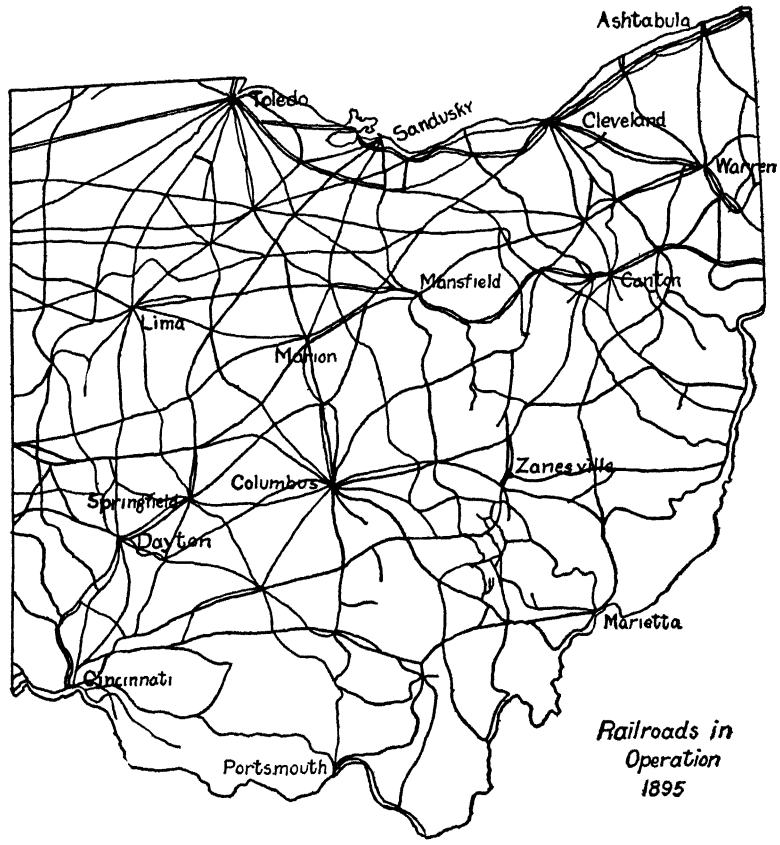
Dayton. The road was opened to Bellevue (sixteen miles) in 1839, and through to Springfield in 1844. In 1848 in connection with the "Little Miami" from Springfield to Cincinnati it formed the first continuous line of railway from Lake Erie to the Ohio River. During the period from 1840 to 1850 more than 3,000 miles of railroad were surveyed, the greater portion of it put under contract, and a part of it put in operation. By 1850 it was evident that the railroad rather than the canal was to be the future means of transportation. During the period 1850 to 1860 the extension of railroads was rapid. The construction of the Cleveland, Columbus and Cincinnati was commenced in 1848; it was opened for traffic late in 1850 and formed the second line between the lake and the Ohio River. The Cleveland and Pittsburg, the third line making the same connection, was opened in 1852. The lines first constructed ran north and south



connecting the lakes with the Ohio River. Of the lines running east and west, the Central Ohio was opened from Wheeling to Columbus in 1854, the Marietta and Cincinnati in 1857 and the Pittsburg, Ft. Wayne and Chicago in 1858.

The Civil War interrupted the construction of railroads. The delay, however, was only temporary; after 1870 their extension was rapid until by 1900 Ohio was well covered with a net of railroads.

The building of railroads has brought better markets and higher prices for agricultural products. They have facilitated communication, they have more closely interrelated agriculture and industry. No one thing has contributed more to the changes in farming since 1850 than this improvement in transportation facilities.



DEVELOPMENT OF CITIES AND RURAL POPULATION

INCREASE IN POPULATION OF OHIO

	Total	Rural*
1850	1,980,329	.....
1860	2,339,511	.....
1870	2,665,260	.....
1880	3,198,062	2,230,861
1890	3,672,316	2,167,939
1900	4,157,545	2,159,163
1910	4,767,121	2,101,978

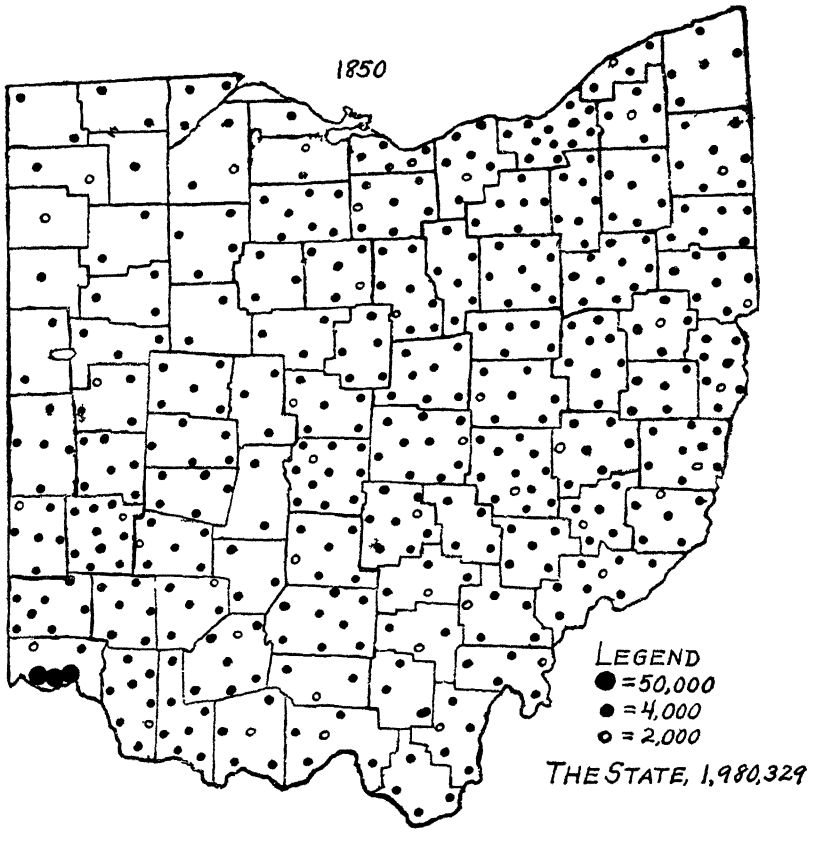
Early development came in 1850.—There were in 1840 a few more than 2,000,000 people living in all the territory west of Pennsylvania and north of the Ohio River; nearly one-half of these were living in Ohio. Ten years later there were nearly 2,000,000 people living in Ohio. Cincinnati, with a population of 115,435, was the only city in the State numbering more than 100,000 in 1850; it was the leading city west of the Allegheny Mountains and was known throughout the United States as the great pork-packing center. The second largest city in the State was Columbus, with a population of 17,882; Cleveland reported a population of 17,034 and Toledo 3,829. A very large proportion of the total population of the State was engaged in agriculture. Transportation facilities in a large measure determined the location and growth of early cities. Previous to 1830 the Ohio River and its tributaries were the chief outlets by which Ohio farm products reached their market. Early settlers were attracted to their borders. After the construction of the canals, however, an increased amount of the surplus farm products moved northward to reach the eastern market through the Erie Canal. New territory was thus opened up to settlement and development.

Movement toward the West.—Immigrants from the Eastern states and from foreign shores were still arriving in Ohio in 1850. Agriculture still attracted the greater number of these. A large part of the immigrants to the rural regions of the State were going to northwestern Ohio, which was as yet but sparsely populated; here the clearing of the forest had only just begun. The early settlers in these counties had come largely from the eastern and southern Ohio counties or from other Eastern states. In 1850 there were living in Ohio more than 200,000 people born in Pennsylvania, 85,762 from Virginia, 83,978 from New York, 66,032 from the New England states, 36,698 from Maryland, 23,532 from New Jersey and 13,829 from Kentucky. In all 538,124 of the people living in Ohio in 1850 were born in other states, all except approximately 30,000 of these coming from eastern states lying north of North Carolina.

*According to the census figures rural population comprises those living in the open country or in villages of less than 2,500.

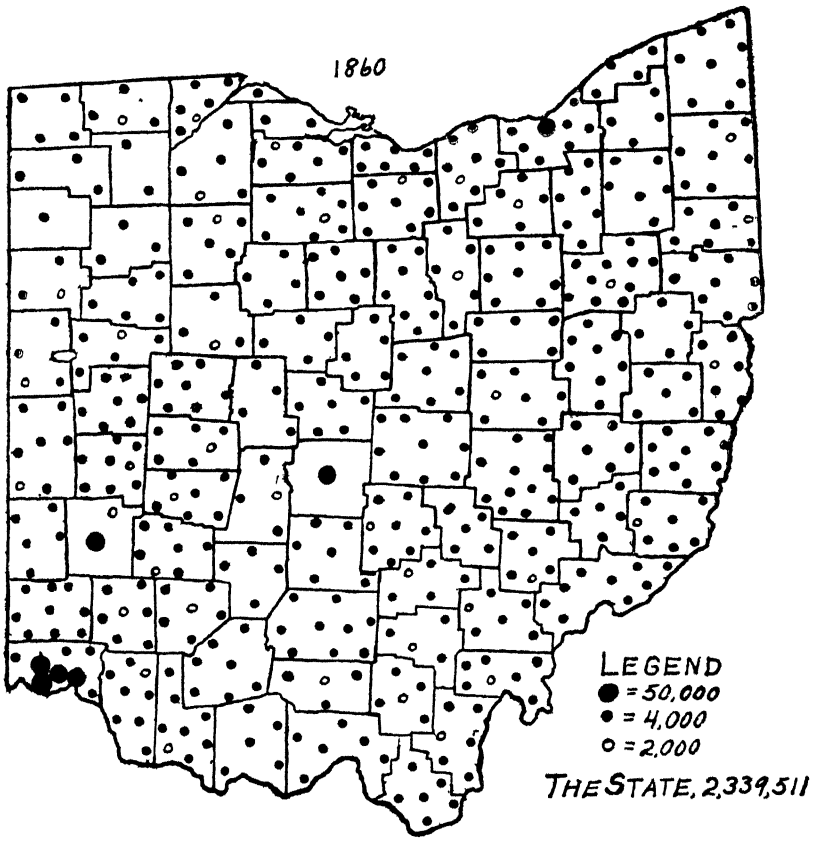
While people from the east were migrating to Ohio, Ohio people were flocking to the West, and settling Indiana, Illinois, Iowa, Missouri and other Western states. Between 1850 and 1860 this movement to the West drew over 400,000 people out of the State. The small wheat farmers of the hilly region of eastern Ohio were reported to be moving west in search of prairie land, while cattle "barons" were buying their land to turn into grazing farms. A large portion of those leaving the state were settling on farms farther west. In 1860, 476,966 people born in other states were living in Ohio, while 593,043 Ohio-born people were living in other states. Many formerly from the eastern states who had settled for a time in Ohio now moved on farther west. At the time of the

DEVELOPMENT OF CITIES AND RURAL POPULATION—1850
TOTAL POPULATION



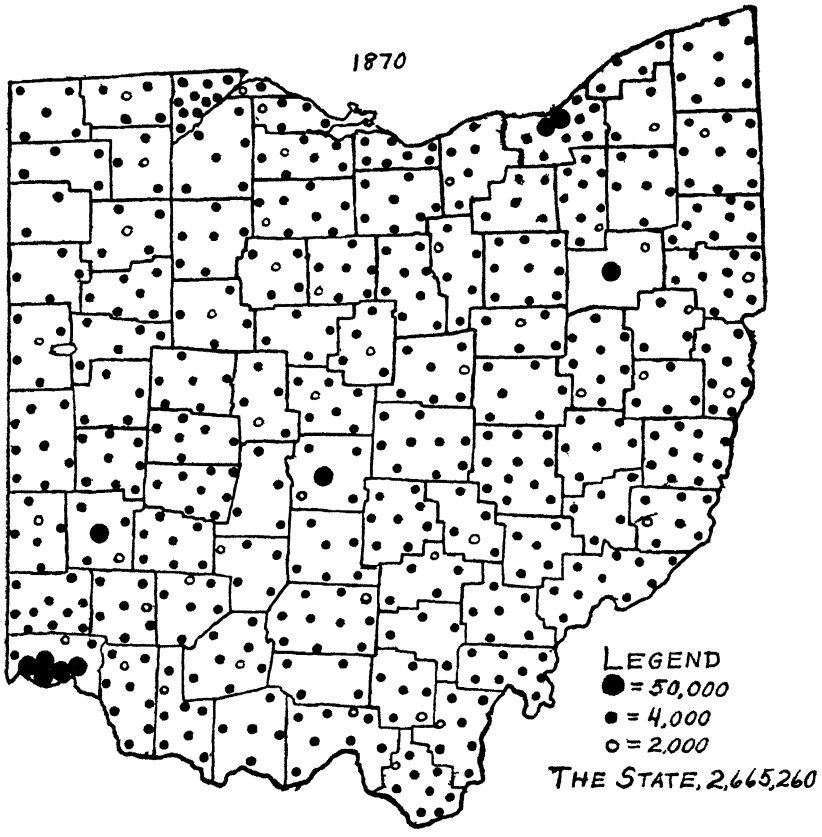
Civil War, Ohio had more native-born people living outside its borders than any other state in the Union. Meanwhile, the new counties of northwestern Ohio increased in population as rapidly as did the Western states since these counties too had cheap and fertile land. Sixteen of the older counties in the eastern half of the State, however, showed an actual loss in total population from 1850 to 1860. During the decade of the 'sixties Ohio people continued to move westward; especially was this true in the few years following the close of the Civil War. Sixteen Ohio counties showed a decrease in population from 1860 to 1870. All of these were rural counties, that is counties having no large cities. They were mainly counties of east central Ohio.

DEVELOPMENT OF CITIES AND RURAL POPULATION—1860
TOTAL POPULATION



Ohio received many nationalities.—There were 372,493 people of foreign birth living in Ohio in 1870. Of these 182,889 were from Germany, 82,674 from Ireland and 36,551 from England and Wales. The people of German birth were to be found especially on the farms of north central Ohio, in the Scioto and Miami valleys, in Tuscarawas, Washington, Meigs, Mercer, Auglaize, Defiance and Henry Counties. The second German immigration, beginning in 1848, had contributed many to the settlement of the latter four counties. The English were to be found in northeastern Ohio, in the extreme southeastern counties, along the National road in central Ohio, in Wood and Huron Counties. The Scotch in northeastern Ohio and in Washington County. The Irish in Trumbull, Mahoning, Summit,

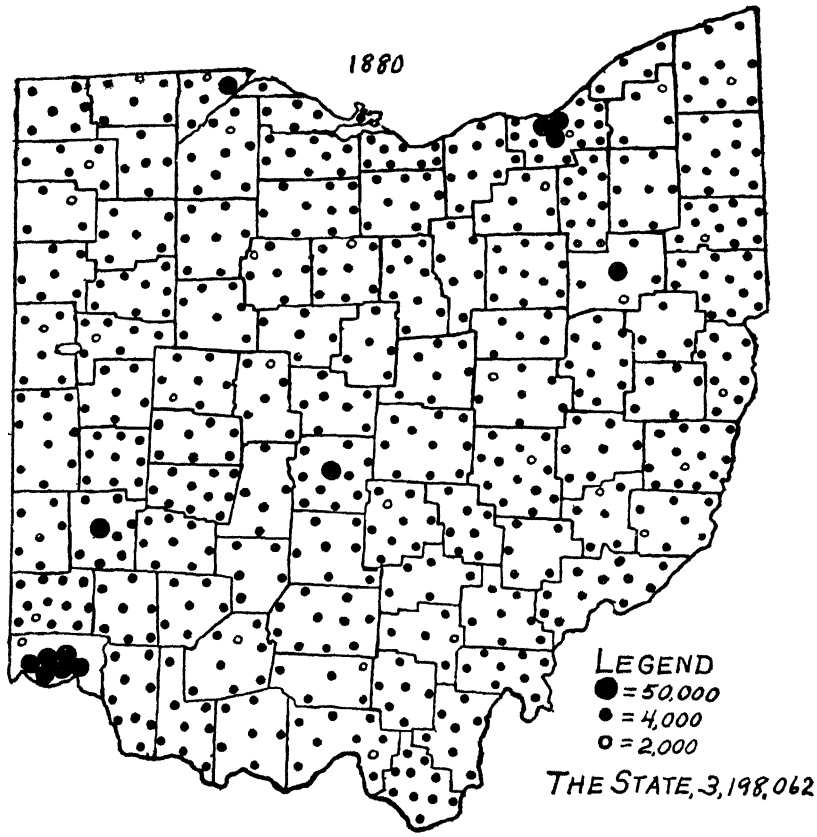
DEVELOPMENT OF CITIES AND RURAL POPULATION—1870
TOTAL POPULATION



Butler, Montgomery and Clark Counties. The Swiss in Tuscarawas, Stark, Wayne, Holmes and Monroe Counties. The French in the counties lying along the Ohio River west of the Scioto, in Lucas, Fulton, Williams, Defiance, Sandusky, Seneca, Cuyahoga, Summit, Wayne, Holmes, Stark and Washington Counties.

At the same time people of Pennsylvania birth were mainly in the counties lying west of the central part of that state, in the so-called "back bone counties," extending from Trumbull and Columbiana Counties westward to Seneca and Crawford. Virginians by birth were largely found south of the old National road. New York people came into the northern tiers of counties. New Englanders were in the Western Reserve counties. Maryland people settled in

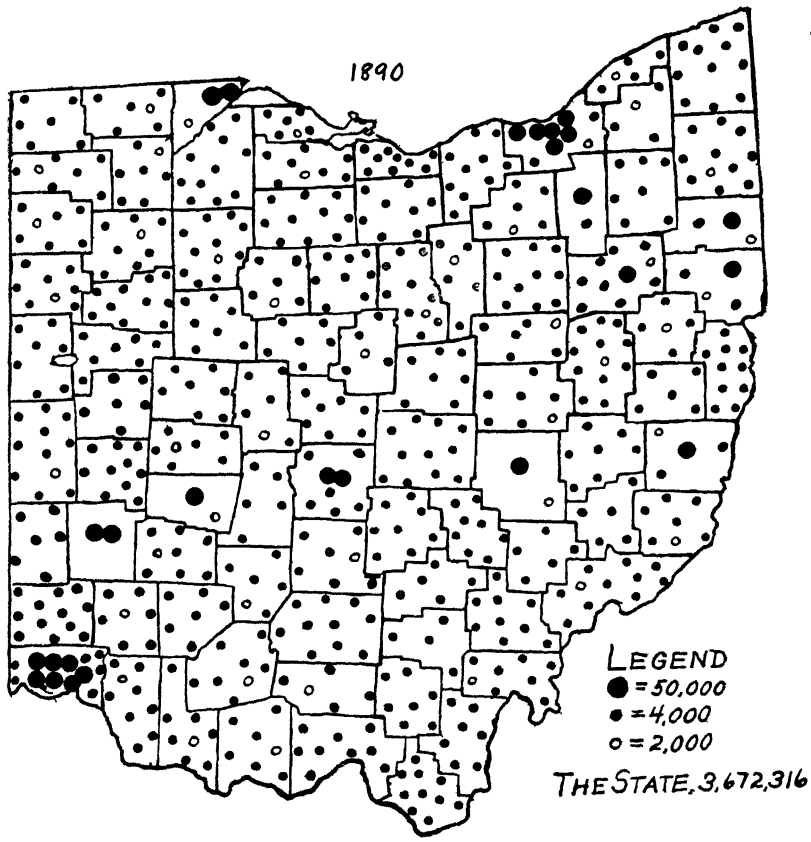
DEVELOPMENT OF CITIES AND RURAL POPULATION—1880
TOTAL POPULATION



the Miami Valley and in the other counties lying along the old National road. Kentucky people were in the southwestern counties.

Western "fever" subsided in 1870.—Following 1870 migration from Ohio to the "West" was much less than during the preceding two decades. From 1870 to 1880 only one Ohio county showed a decrease in population. From 1880 to 1890 thirteen scattered counties showed a decrease in population; from 1890 to 1900, nine. From 1900 to 1910, while the total population of the State increased over 600,000, thirty-nine Ohio counties showed a decrease in population. All of these were rural counties, that is, counties having no large city. Those counties showing the largest increase were the counties having a large industrial population. Since 1880 the move-

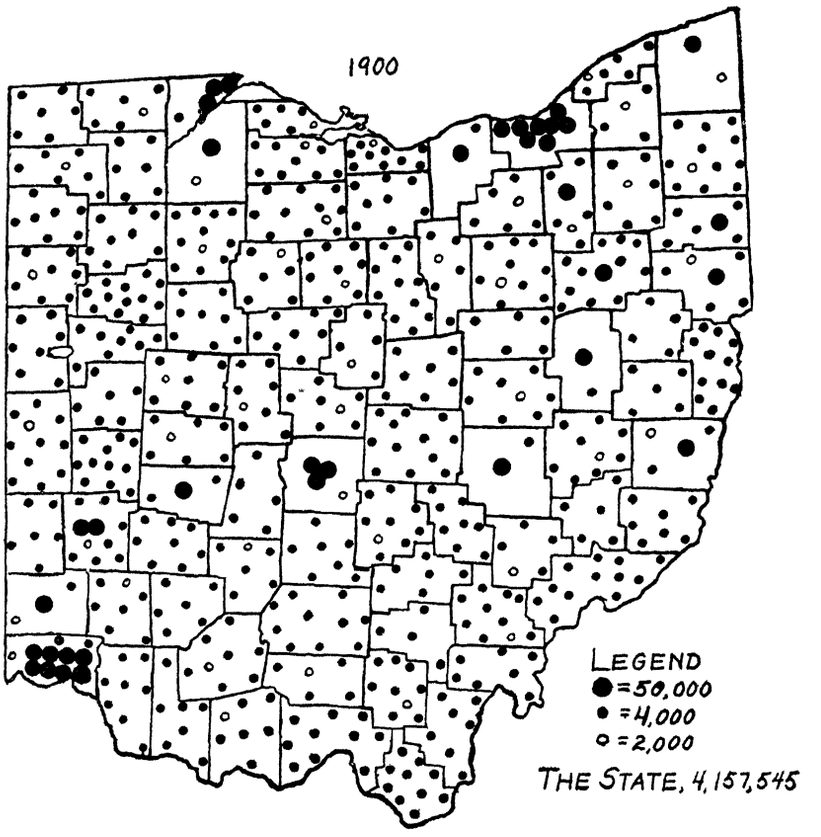
DEVELOPMENT OF CITIES AND RURAL POPULATION—1890
TOTAL POPULATION



ment of Ohio's rural population has not been to the farms of the West but to Ohio cities. In 1910 twelve Ohio counties, namely, Ashland, Brown, Carroll, Clermont, Geauga, Morrow, Medina, Monroe, Noble, Morgan and Harrison reported less population than in 1850. Holmes, Meigs and Vinton Counties less in 1910 than in 1860. This relatively rapid increase of city population has made itself apparent in many ways; particularly tending to improve the market for farm products and through changing the nature of the demand has had much to do in determining the type of farming in many sections of the State.

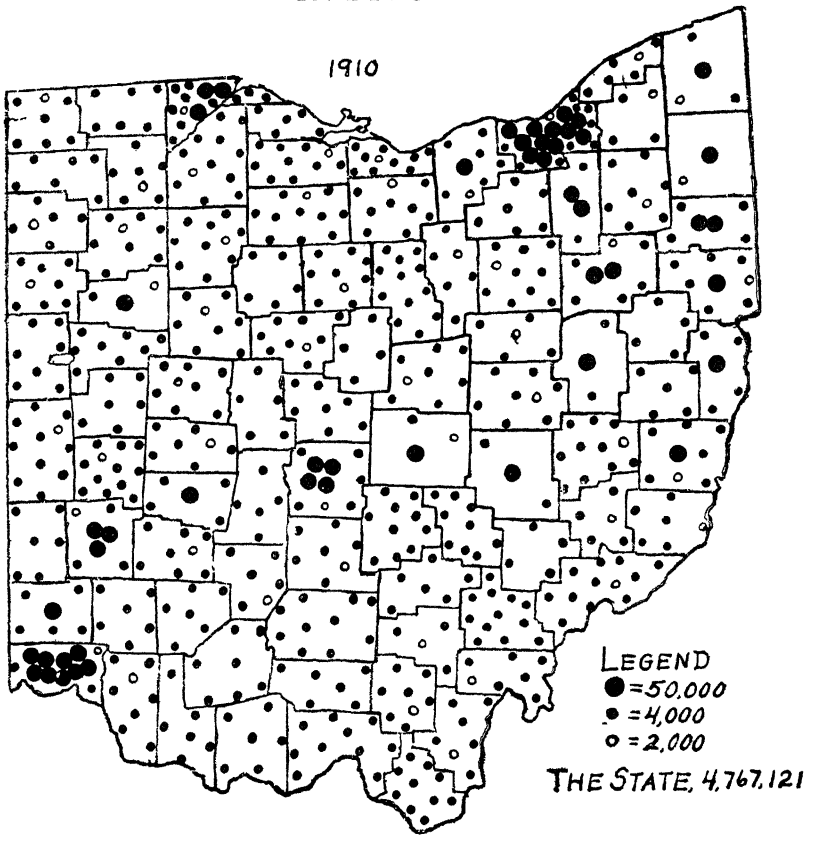
Farm population has declined since 1880.—Since 1880 Ohio's farm population has declined in numbers. This decline was especially marked from 1900 to 1910. In the 10 years following 1900,

DEVELOPMENT OF CITIES AND RURAL POPULATION—1900
TOTAL POPULATION



sixty-nine Ohio counties showed a decrease in rural population, only nineteen counties showed an increase. Paulding County reported a decrease of 4,719 or 17.1 percent. Rural population was not reported separate from urban population by the census until 1880, but since that date every census period has shown an actual decline in the rural population of the State, until in 1910 less than one-half, 44.1 percent, of the people of the State were classed as rural. Many causes have contributed to this movement. Among others may be mentioned the development and introduction of labor-saving machinery for the farm, the development of manufacture and commerce, the rise in land values, the attraction of the city, the fact that foreign immigrants are now going to the city rather than to the farm.

DEVELOPMENT OF CITIES AND RURAL POPULATION—1910
TOTAL POPULATION



DEVELOPMENT OF FARM MACHINERY IN OHIO

No one thing symbolizes the progress of American agriculture during the latter half of the nineteenth century better than the development of agricultural machinery. Labor has been scarce, land abundant. The necessity for economizing labor has led to the development and adoption of labor-saving machinery, the characteristics of which have been cheapness, simplicity and execution over a large area.

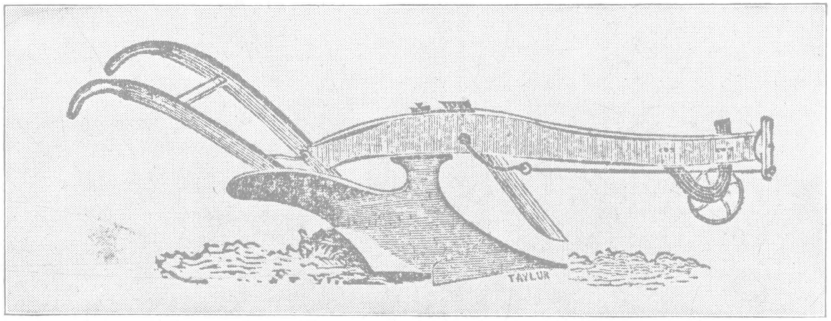
Reaper and mower came first.—There had been considerable improvement in farm machinery previous to 1840. An Ohio farm at that date could be worked with half the expense of labor that was required to work it 40 years before, and better worked withall. There had been much improvement, but compared with that which was to come during the next 40 years it was, indeed, small. Charles Newbold and Jethro Wood, improvers of the plow, had been prominent in the development of agricultural machinery from 1820 to 1840. From 1840 to 1860 Hussey, McCormick, Whiteley and Ketchum, improvers of the reaper and mower, were foremost. Now that the farmer had something better than his old wooden "bull" plow, attention was turned to labor saving in other lines of work, and the reaper, the threshing machine, the mower, and other implements were developed and adopted. By 1860 grain was commonly cut with the reaper, but still bound by hand. The combined thresher and separator had come into use. Steam threshing outfits had been tried. Mowing machines were widely used. The wheeled horse-rake had begun to supplant the wooden revolving horse-rake. The steel plow had replaced the cast iron plow. The single shovel plow had given way to the double shovel plow. After 1870 the two-row corn planter and the two-horse corn cultivator was developed. Small tools, now made of steel, had been greatly improved.

The first public trial of the reaper was made by Obed Hussey in a field near Cincinnati on July 2, 1833. The development of the binder will illustrate how farm machinery has supplanted labor. In 1910, 12 acres of grain could be readily cut and bound in 1 day by one man. To have accomplished the same amount of work by the methods of 1840 would have required twelve men; of 1855 eight men; of 1865 seven men; of 1875 three men. The scarcity of labor and high prices during the Civil War did much to hasten the adoption of improved farm machinery.

The manure spreader, the corn binder, the two-row corn cultivator, the hay loader and the tractor are among the more recent machines to be developed and adopted.

FIRST PLOW CAME FROM SAW BLADE

In 1837 John Deere of Illinois made his first steel plow from a saw blade; within a few years his plows were celebrated throughout the West. By 1850 the steel plow was rapidly replacing the cast iron plow in Ohio. There was a great variety in the pattern of plows in use in 1850. Each pattern had its advocates, and each one in its turn was declared to be the best. By 1860 the plow had been well improved. With the old wooden mold-board plow, three yoke of oxen and two men or two men and a boy had been able to turn over 1 acre a day; with the steel plow one man with a team of horses would plow 1½ acres a day in a much better manner.

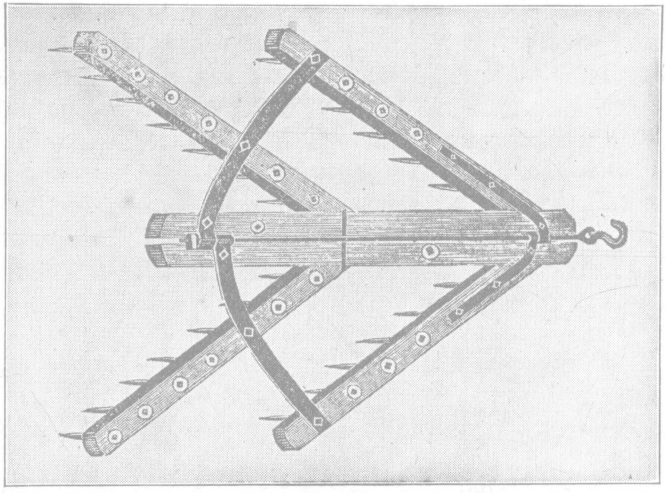


The plow in 1850

CULTIVATORS INTRODUCED IN 1850

By 1850 the steel-tooth cultivator was coming into use in Ohio. It was used for the early cultivation of corn; for the later cultivation the corn plow or the shovel plow was commonly used. As used by many the latter was now a double shovel plow, an extra shovel having been added. As the steel-tooth cultivator was developed the use of the plow for cultivating corn declined.

By 1860 the two-horse, straddle-row cultivator was coming into use, and during the following decade was widely adopted. It is within the last 20 years that the two-row cultivator has been developed. Spike-tooth harrows of the Square Scotch and A type were the only improved harrows in use in 1850.

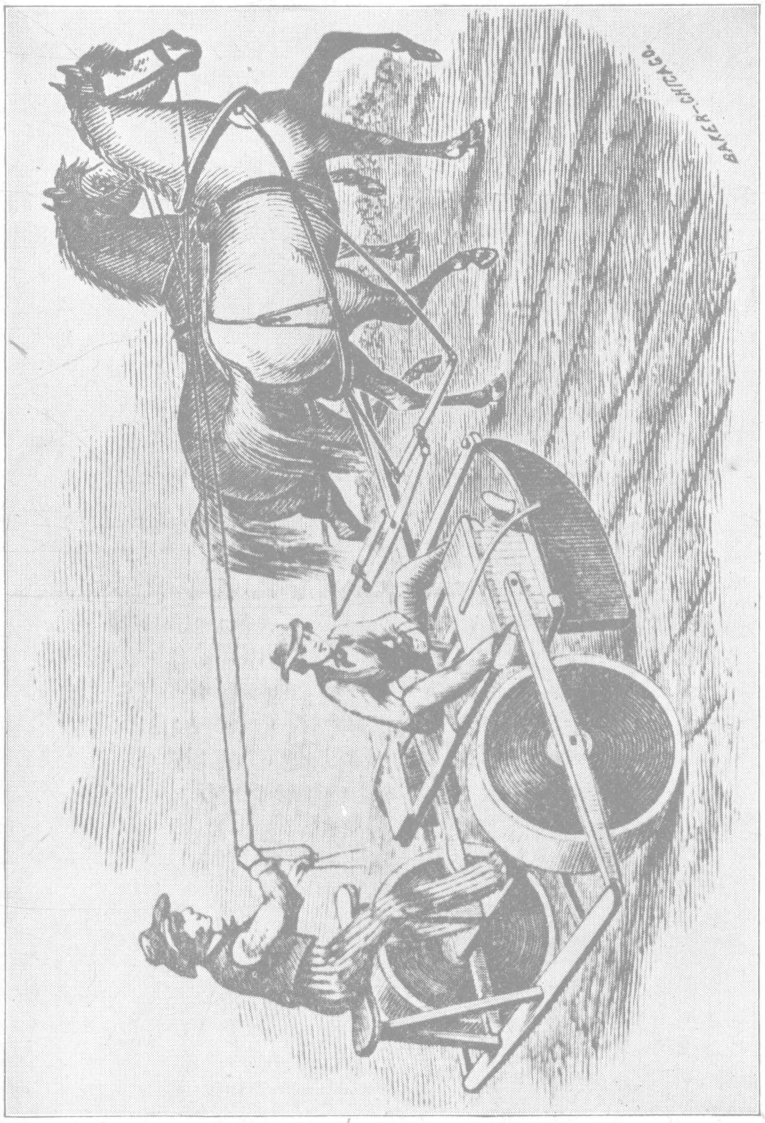


Geddes harrow in 1850

CORN PLANTERS CAME IN 1850

Until 1850 no machine had been introduced in Ohio for planting corn that had been generally approved or extensively used by corn-growing farmers. The common method of planting used by the large corn growers was to furrow the field both ways with a small plow, drop the corn at the intersections and then cover either by hand, with a harrow or by running a bull-tongue plow along the edge of the furrow. Ingenious farmers had their own particular contrivance for marking the field and covering the seed.

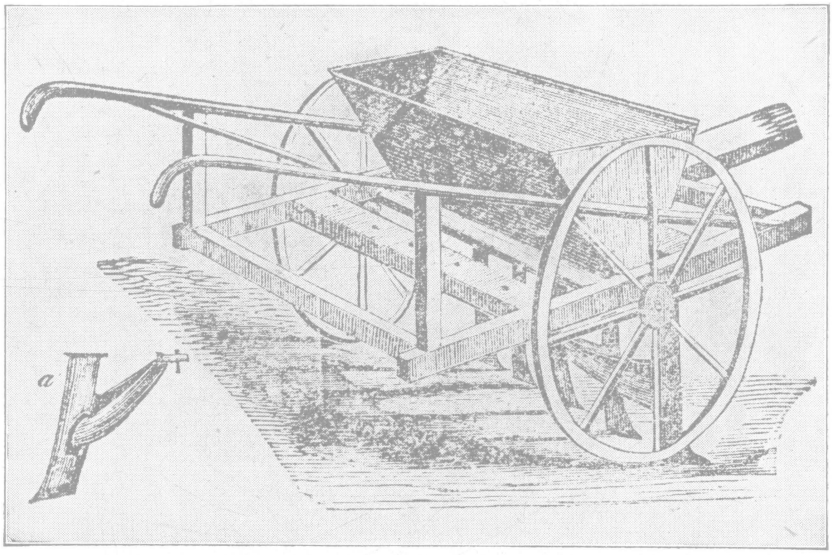
By the early 'fifties corn planters were coming into use; after the middle of the decade they multiplied rapidly in number; by 1860 a large portion of the corn in the corn-growing regions of the State was reported to be planted by machine, by one-row and two-row planters, drill planters and hill planters. Brown's corn planter was a popular machine during the decade of the Civil War.



Corn planter in 1860

COMING OF WHEAT DRILLS

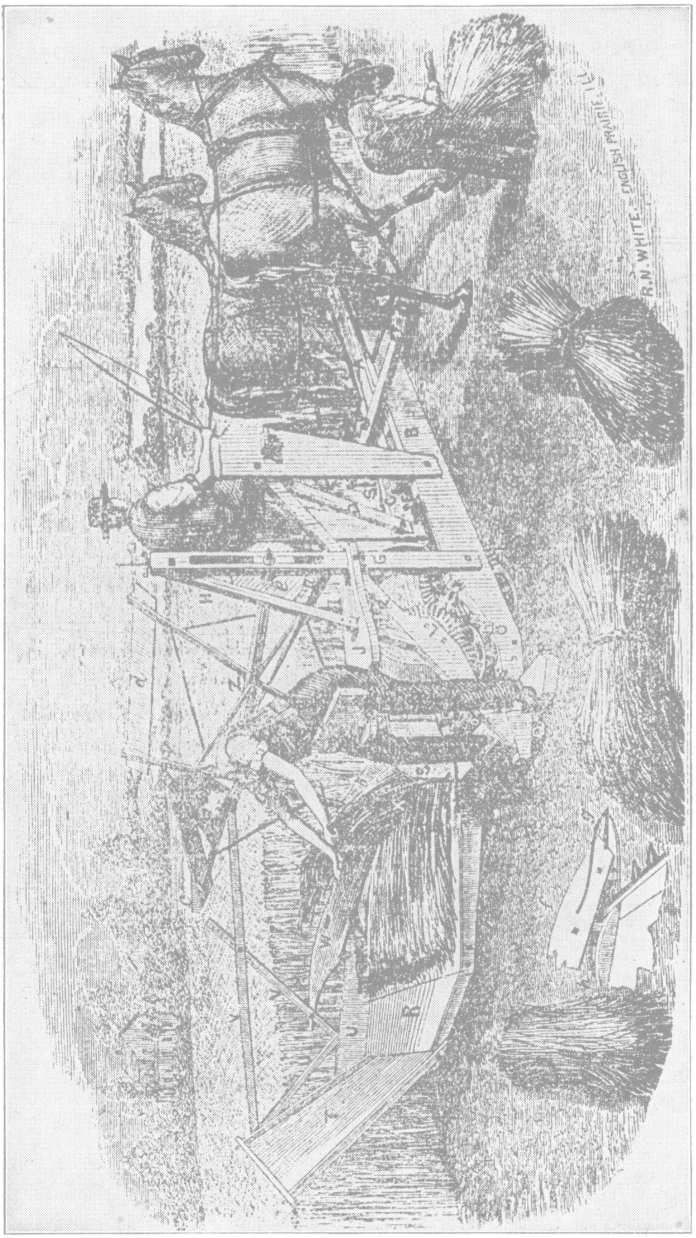
In 1840 wheat was sown broadcast by hand. The common method of seeding was to sow the seed on the plowed surface and harrow it in with a harrow or cultivator; others plowed the seed in with a shovel plow, and followed the plow with the harrow. By 1850 a few Ohio farmers had experimented with seeders. The Pennock and the Gatling machines were early favorites. The seeder did not come into general use in Ohio until after the Civil War. The seeder was not a labor saver to the same extent as the harvester, the mower and the cultivator. Its adoption was consequently less rapid.



Wheat drill in 1860

REAPERS INCREASED THE MAN POWER

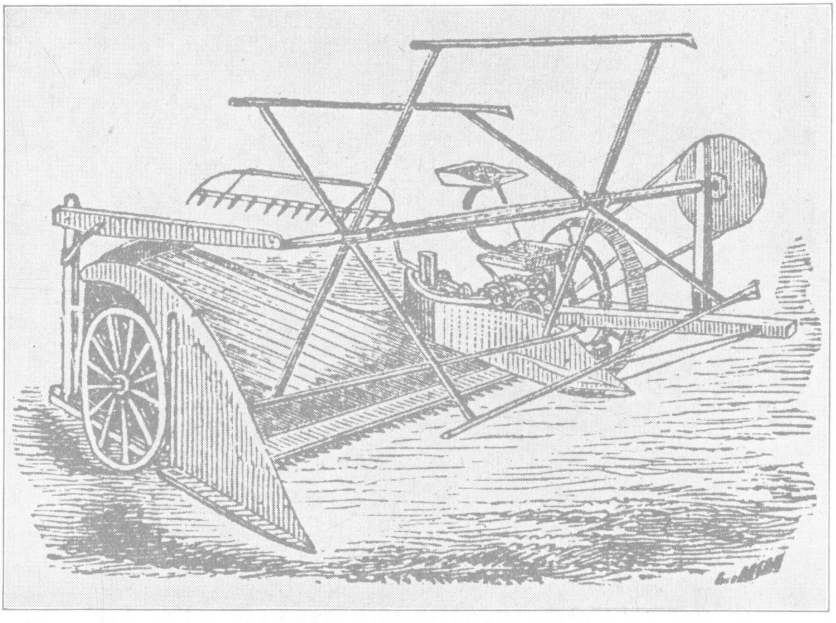
The Ohio grain crop of 1850 was cut with the cradle, or sickle. With a cradle a man would average to cut and bind not much over 1 acre a day, but the cradle was not adapted to tangled grain. The reaper was only just emerging from the experimental stage. During the 'fifties and 'sixties the reaper supplanted both cradle and sickle in the grain-growing regions. Grain was now cut by machine but still bound by hand. During the 'fifties a raking attachment was tried out. Probably one-half the machines used in Ohio in 1860 were self-raking. The McCormick reaper had been tried out in Ohio by 1850. It was reported at that time, however, that the



The reaper in 1850

Hussey machine was giving better satisfaction. Some twenty of the latter machines were said to have been sold in Ohio in 1848.

The Marsh harvester was popular during the 'seventies. With this machine two men rode and bound the grain by hand. Machines of the type of the New York Self-Raking reaper were widely used in the 'seventies. With the advent of the twine-binder in the 'eighties the development of grain-harvesting machinery was nearly completed. One man can now cut and bind 12 acres per day.

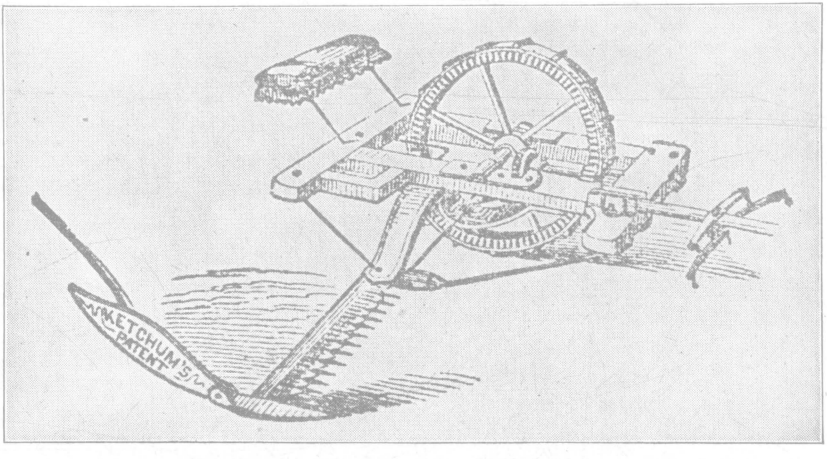


The reaper in 1870

MOWERS IMPROVED EARLY

Until 1850 the mower had not come into use in Ohio; hay was still cut with the scythe. In the early development of the reaper and mower the two machines were made interchangable. By removing the platform at the rear of the cutterbar, the reaper could be transformed into a mower. The first successful mower to be placed on the market as a machine distinct from the reaper was that of W. F. Ketchum, patented in 1844 and greatly improved in 1847. The patent of Cyrenus Wheeler in 1856 marked the beginning of the

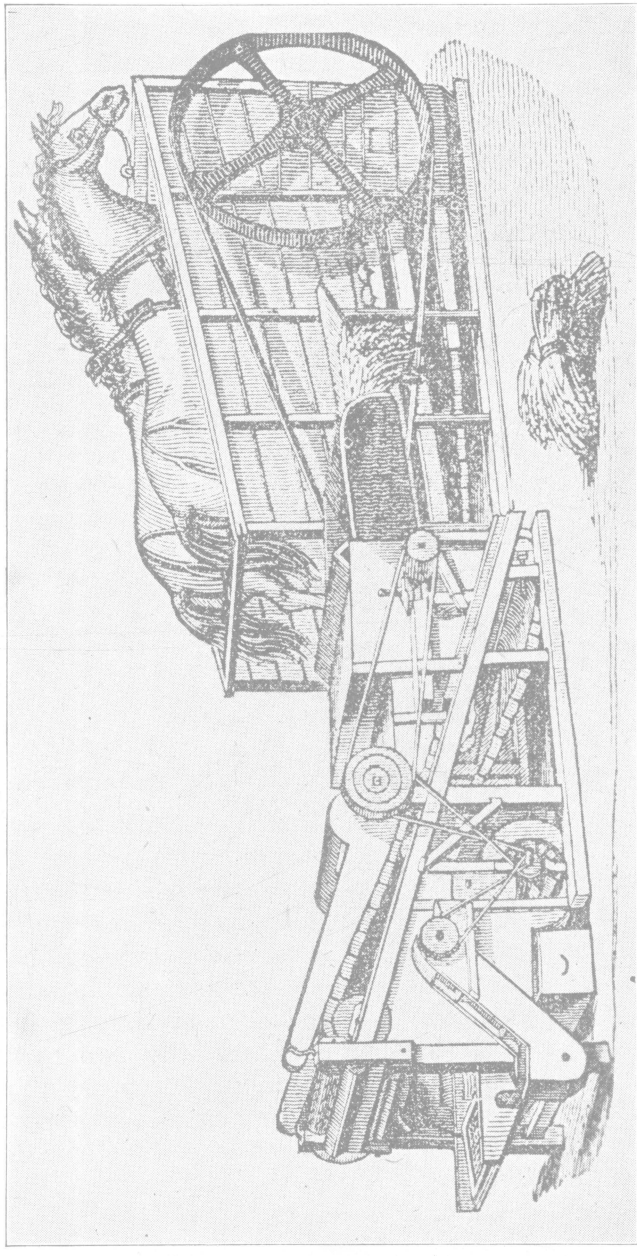
modern two-wheeled mower with a flexible cutter bar. With the appearance of machines of the type of the "Buckeye" and "Wood" mowers, the mower had become a thoroughly practical machine by 1860, and was generally adopted during the decade of the Civil War.



The mower in 1850

EARLY THRESHING MACHINERY OPERATED BY HORSE POWER

The flail had given way to the threshing machine previous to 1850. By that date also the early threshing machines of the stationary type were giving way to portable machines of the combined thresher and separator type. The threshing machines used in 1850 were operated by horse power, driven either in a sweep or a tread mill. The improved machines usually required six to ten horses with from ten to twenty men in attendance and thrashed from 200 to 400 bushels per day. Smaller machines with two horses and three or four men would thresh from 150 to 200 bushels per day. The Pitt thresher and separator was the most satisfactory combination on the market in 1850. There has been considerable improvement made since that date. During the 'sixties steam began to supplant the horse as the motive power.



Pitt's thrasher and cleaner in 1850

DEVELOPMENT OF AGRICULTURAL REGIONS IN OHIO

There was considerable variation in the types of farming as found in the different sections of Ohio in 1910. This does not mean that all the farms in a given section were carrying on the same type of farming but rather that certain types predominated. While there has, perhaps, not been the radical change in Ohio agriculture since 1850 which has taken place in other states, there have been many changes and readjustments. In some sections of the State, farming had only just begun at that date. Much of the land in northwestern Ohio had not as yet been cleared from the forest. New means of transportation and new markets have since developed, new farm machinery and new methods have been adopted. New types of farming and centers of production have grown, others have been modified.

Topography influences farming types.—Topography does much to influence the type of farming in the State. In Ohio, there is a wide diversity of topography, ranging from level plains with not more than 10 feet change in elevation for several miles, to rough hills with steep slopes and ridges rising almost vertically from the stream valleys to a height of 300 to 500 feet. In the more level areas drainage is still deficient, while in the more hilly sections the rainfall runs off rapidly and much damage is done by erosion.

About one-fourth of the State may be called hilly. This comprises essentially the non-glaciated section of the State, or the southeastern counties. Beginning at the Ohio River in eastern Adams County, the dividing line runs northeast through Chillicothe and Lancaster, thence northward to the northeastern corner of Knox County and thence east through Canton and Lisbon to the Pennsylvania line. South and east of this line the land is generally hilly, consisting of a succession of hills and sharp winding ridges, separated by deep, narrow valleys. There are, however, many small areas where the surface is level or gently rolling. The boundary between the hilly and the level section is in some places very distinct, while in others there is a gradual grading of hills into level prairies. Although the hilly section proper is in the northeastern part of the State and along the Ohio River, there are many small areas in other sections of the State which are decidedly hilly, particularly along the other rivers as the Miami, and in Logan County.

Approximately three-fourths of the State, comprising the western and northern sections, consists of level to rolling plains, formerly covered with forest. This is the glaciated part of Ohio. With the exception of a few areas, this land lies well for tillage, consisting

of gently rolling plains with just enough change in elevation to give, as a rule, good drainage. Extended areas, however, have needed to be ditched before allowing of full development, while much is still in need of adequate drainage. The largest area of this level country is in the northwestern part of the State in the section constituting the old lake bed, comprising most of Ottawa, Lucas, Fulton, Henry, Defiance, Paulding, Van Wert, Putnam, Wood, Sandusky and Erie Counties.

Another distinct type of farming is to be found upon the bottom lands. Throughout most of the hilly counties, as well as in the level section of the State, are found strips of bottom land along the rivers and streams. Probably the most extensive of these are along the Ohio and its tributaries, the Miami, the Scioto and the Muskingum. Lesser areas of bottom land are, however, to be found along the other streams. As a rule, the bottom lands along Ohio Rivers are narrow, yet they have been outstanding in Ohio agriculture since the beginning of farming in the State.

While there is marked variation in topography and in the character of Ohio's soils, the climatic conditions of the State are fairly uniform. For this reason, variations in soil and topography are probably more important in determining crops grown in the various sections of the State than climate. Yet temperature is an important factor in determining the distribution of many crops in Ohio. Few oats are grown in the southern one-third of the State. Grape production on a large scale is confined to the lake shore.

Corn and clover follow limestone areas.—Practically all that portion of the State lying west of a line extending from Sandusky south to the Ohio River through Columbus and the eastern part of Adams County is underlaid with limestone. Two exceptions to this are areas in the northwest and small areas in Logan County. In the eastern half of the State the soil formation consists mainly of sandstone and shale. These soils are generally acid. There are, however, to be found limited areas of limestone soils in the southeastern part of the State. These variations in soil, topography and climate are of fundamental importance in determining type of farming.

The distribution of the corn and clover acreage of the State shows quite clearly the line separating the two soil areas. West of the line is the corn and hog-raising section of the State; east of this line there is less corn produced, and the acreage has tended to decrease during the past 50 years. On the west, it has rapidly increased. On the west, there is more clover grown than on the east.

On the east grazing, with dairying and sheep growing have been and still were in 1910 the major source of income from the farm, although wheat, potatoes and fruit add materially to the income in many counties.

Hilly sections adapted to livestock farming.—In the hilly section of the southeastern counties, a large part of the land is too steep for general crop farming and much of the remainder is cultivated with some difficulty when compared with that in the western half of the State. Much of the land in farms is in untillable and woodland pasture. For this reason a large part of the receipts on the farms of this section has always been from livestock and livestock products. In the decade of the 'fifties wheat was one of the leading sources of farm income, but since that date the area planted has been steadily decreasing. Since the 'seventies the area in corn and oats has also decreased. Up to 1890 Belmont, Monroe, Noble, Washington, Morgan and adjacent counties were among the leading tobacco-producing counties in the State. Wool, tobacco and wheat were the chief sources of farm income. Since the 'eighties, however, the tobacco acreage has steadily decreased until in 1910 there was less produced in the entire southeastern quarter of the State than was produced in a single county in 1880. Few farms now raise more than 2 acres of tobacco. The statistics show that this section has the lowest average yield of corn, wheat and oats of any part of the State. Hay has been the leading crop in the southeast and since 1850 has steadily increased in acreage and relative importance.

In the raising of cattle, the section has held its own. Many head of young stock, as well as fat cattle, are annually sold from this section. A decrease in the number of hogs has gone along with the decrease in corn area. From 1870 to 1890, the northern part was the leading wool-growing section; since that date there has been a material reduction in the number of sheep kept. It is still, however, the leading sheep and wool section. From 1900 to 1910, dairying increased in the more productive sections. Fruit growing has been extensively engaged in by many. Trucking has developed in the Muskingum Valley.

On the hill farms corn, then wheat or oats, followed by hay for 2 or more years is the usual cropping system. On the bottom land more corn and less hay is grown. Morgan County from 1850 to 1859 averaged the following acreages of the four leading crops; corn, 19,879; acres; wheat, 29,155 acres; oats, 7,810 acres, and hay, 17,153 acres. From 1900 to 1909 the acreages averaged as follows: corn, 14,616, wheat 10,647, oats 2,703, and hay 29,028. There were 882

acres of tobacco reported in 1860-1869 and 11 acres in 1900-1909. As for livestock, there were in 1850, 10,550 head of cattle, of which 6,574 were dairy cows, 23,010 hogs and 10,000 sheep. In 1910, there were 13,898 head of cattle of which 5,771 were dairy cows, 8,155 hogs and 94,772 sheep.

Dairying predominates in northeastern counties.—In the northeastern counties, especially in the region of the Western Reserve, dairying has been the predominating enterprise since 1850. Poor drainage and an acid soil have not been conducive to a large corn area. In recent years much of the corn has been put into the silo for winter feeding. Wheat has always been a minor crop. Since 1860 the acreage in oats has increased. In the extreme northeastern counties buckwheat was an important crop in 1910. Hay has always been the predominating crop and when not consumed by the dairy cow provides an important source of income for many farms. Since 1880 the area in potatoes has been rapidly increasing and on many farms in 1910 provided the chief or only cash crop. On many a farm the sale of maple syrup adds materially to the annual income. The area in crops was nearly the same in 1910 as in 1850. Unlike the southeastern counties the corn area in the northeastern counties has been maintained, due undoubtedly partly to the prevalence of the silo, which has rapidly increased in number since 1890. While the wheat area has decreased somewhat since 1890, the area in oats has has increased accordingly. It is impossible to compare past and present corn yields in this section, on the basis of available figures, because of the early practice of reporting corn in measured bushels of ear corn. The yields of both wheat and oats have been maintained, if not slightly increased. Corn, oats, wheat, hay, with several years in hay, was the prevailing rotation in 1910. Many of the better farmers, however, have only one or two years in hay.

Because of the small corn area hogs have never been an important source of income in this region, while the prevalence of dairying tended to keep out sheep. Much hilly and poorly-drained land has provided an abundance of pasture area. Growing local markets have created a demand for market milk. As for important enterprises, Portage County, for example, in 1900-1909 averaged 14,508 acres of corn, 18,052 acres of wheat 20,002 acres of oats, 8,133 acres of potatoes and 33,050 acres of hay. As for livestock, there were 23,118 head of cattle of which 16,791 were dairy cows, 13,116 hogs and 17,027 sheep.

The wheat counties.—On the northern edge of the hilly area and south of the Western Reserve is a group of counties known as

the "backbone counties" of Ohio. These counties have continued to be the leading wheat-growing counties of the State since its early settlement. They have also steadily maintained a position among the leading oat growing counties. By 1850, the old practice of sowing wheat on a summer fallow had largely ceased in these counties, a clover crop having taken the place of the fallow. For the past 60 years clover has here occupied a greater part of the total hay area than in any of the other eastern counties. As for livestock, the dairy cow predominates.

In all the northeastern counties and also in some of the southeastern counties are more or less extensive orchards which when well cared for provide good returns. Of recent years, with the development of good roads and local markets, the growing of truck crops and the keeping of poultry have increased. Along the lake shore, vineyards and small fruits are extensively grown.

The corn counties.—With the exception of the Ohio River district, corn is the leading crop of the western counties. Here the average yield of corn is considerably above that of the eastern counties. Level land and a limestone soil have been favorable to crop production. A smaller hay acreage and more grain crops are grown than in the eastern counties. A much larger proportion of the total hay area is in clover. As for livestock, hogs and beef cattle predominate, while sheep are quite extensively raised and fed in the north central counties. Of recent years, dairying has been extending in the vicinity of the large cities and in Fulton County where several condensaries have been built. While the eastern and southwestern counties had been long settled and farmed previous to 1850, the northwestern counties were only then being settled.

By 1850 the southwestern counties were rivaling the old wheat-growing section of "the backbone region" in wheat production. Since that time they have increased their area in wheat. From Madison and Darke Counties north, oats enter into the rotation; Darke, Miami and Shelby Counties ranking among the leading oat producing counties of the State. In the southwestern counties the prevailing rotations in 1900-1909 were corn, wheat and clover; corn, wheat, clover, pasture; or corn, oats, wheat, clover. In the tobacco-growing counties, tobacco replaces corn in a part of the rotation on the larger farms. Corn or tobacco, wheat then clover or clover and timothy is a common rotation. While with others, in the oat growing section, it is corn or tobacco, wheat, oats, clover or clover and timothy. The general practice is to put the best part of the land broken up into tobacco, the remainder into corn. On the smaller

farms, with limited acreage, it is customary to grow tobacco continuously on the same land, or at least for several years in succession. In the Miami Valley there has been considerable expansion of the alfalfa area.

Taking Greene County as a representative county of this section, for the period of 1900-1909, there were reported 58,255 acres of corn, 38,453 acres of wheat, 8,024 acres of oats and 26,907 acres of hay, of which 12,103 acres were clover. Darke County reported for the same period 89,510 acres of corn, 13,691 acres of tobacco, 51,783 acres of wheat, 33,988 acres of oats and 42,862 acres of hay, of which 26,165 acres were clover. Much of the bottom land and other of the more fertile land is planted to corn for two or more years in succession, then followed by wheat and clover. Up to the decade of the 'eighties wheat production continually increased in the southwestern counties; during the 'nineties it remained stationary; during the first decade of the twentieth century it was materially reduced. The area in corn steadily increased up to the decade of the 'eighties. Oat production increased rapidly after 1900. As for livestock there was reported from Darke County in 1900-1909 an average of 25,766 head of neat cattle of which 15,886 were reported as dairy cows, 77,474 hogs and 6,344 sheep.

The northwestern section of the State was the last to be developed. Here the type of farming in 1910 was essentially similar to that in the corn-growing counties of the southwest. In the extreme northwestern counties oats exceed wheat in acreage planted. In Henry County, for example, there was reported from 1900 to 1909 an average acreage of 57,002 acres of corn, 27,384 acres of oats, 25,746 acres of wheat and 33,574 acres of hay, of which 9,739 acres were clover. In Sandusky County for the same period there was reported 41,878 acres of corn, 23,907 acres of oats, 28,610 acres of wheat and 27,502 acres of hay, of which 9,099 acres were clover. Since 1900 the area in sugarbeets had been rapidly extended. In the old lake bed region in 1900 there was a growing tendency to rotate the crops with clover. In former years, it had been the practice to grow corn after corn for years in succession until the stumps were rotted out, then to follow with a rotation of corn and oats, while more recently one of corn, oats and clover, has come into favor. in the sugarbeet area the beets take the place of corn in the rotation. Drainage and better cultivation of late years have made the crops more certain. During the past 30 years these counties have shown a greater increase in the acres of staple crops than any other section of the State. As in the southwest the area in wheat decreased during the decade 1900-1909.

As for livestock there were reported in Henry County in 1900-1909, 15,650 head of cattle of which 9,764 were dairy cows, 36,243 hogs and 9,264 sheep. In Fulton County and in the vicinity of cities the number of dairies was increasing. The northwestern counties lead all other sections of the State in the amount of feedable crops sold. The sale of oats contributes largely to this. The amount of livestock to crop area is less than in the southwestern counties.

On the bottom lands of the State, corn has been and still is the leading crop. On some fields in the Scioto Valley corn is grown year after year on the same land. Others rotate their crops with two years corn then wheat or oats, then clover.

In many sections of the State vegetable growing has developed. Examples of this are the Scioto Valley, where canneries have been established, and in the Muskingum River Valley, where vegetables, especially corn, cucumbers, tomatoes and cabbage, are extensively grown for the Pittsburg market. Along the watershed which divides the Ohio River from the Great Lakes is a series of marshes, many of which have in recent years been drained and extensively given over to vegetable production. In the neighborhood of the large cities, as Cleveland, Cincinnati, Columbus and Toledo, market gardening is extensively carried on. Grape production along the Great Lakes has largely developed. Orcharding in the greater part of the State is carried on as a part of the general farm business. In the last three decades, however, many commercial orchards have been developed along the Lakes, in the northeastern counties and in southeastern Ohio.

THE CATTLE INDUSTRY IN OHIO

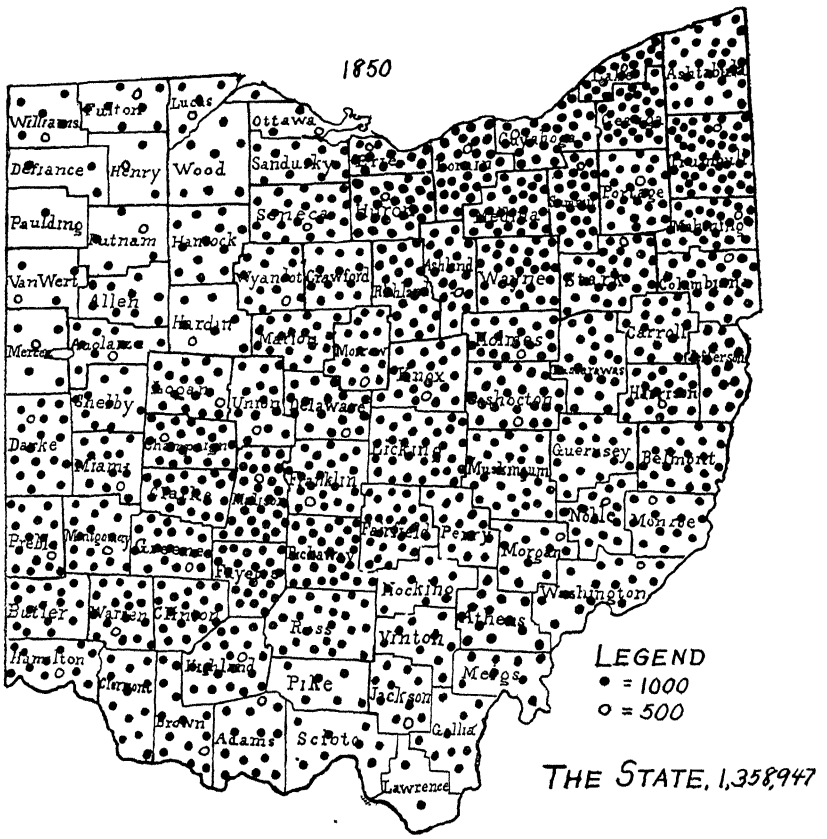
Cattle the chief livestock of Ohio.—From the earliest settlement of the State cattle have occupied the leading position in its livestock industry, the potential feed consumption of cattle exceeding that of horses, sheep and swine combined. Cattle, therefore, have held a close relation to the problems concerning the maintenance of soil fertility, and the statistics of crop production which follow in the next part of this bulletin will show that, as a rule, increasing or diminishing numbers of cattle and increasing or decreasing yields of the acre have generally been closely associated.

CATTLE INDUSTRY IN OHIO

Year	Number
1850	1,358,947
1860	1,634,740
1870	1,436,217
1880	1,860,187
1890	1,763,387
1900	1,558,729
1910	1,581,925

Early cattle business flourished.—The cattle business of Ohio was in a flourishing condition during the 'fifties. Ohio and the blue-grass region of Kentucky at that time constituted the prominent cattle regions west of Pennsylvania. During the preceding decade the number of cattle in the State had increased in spite of the fact

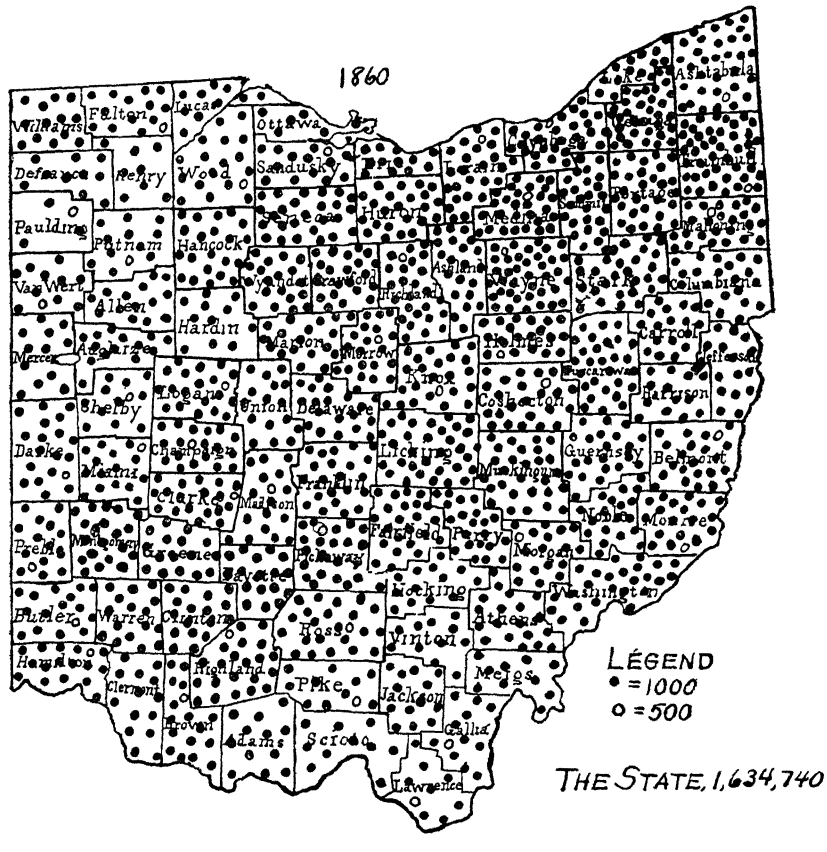
CATTLE IN OHIO—1850



that several of the leading sheep counties, Harrison, Guernsey, Licking, Knox and Delaware reported a decline in number of cattle. From 1850 to 1860 there was a continued increase in the number of cattle.

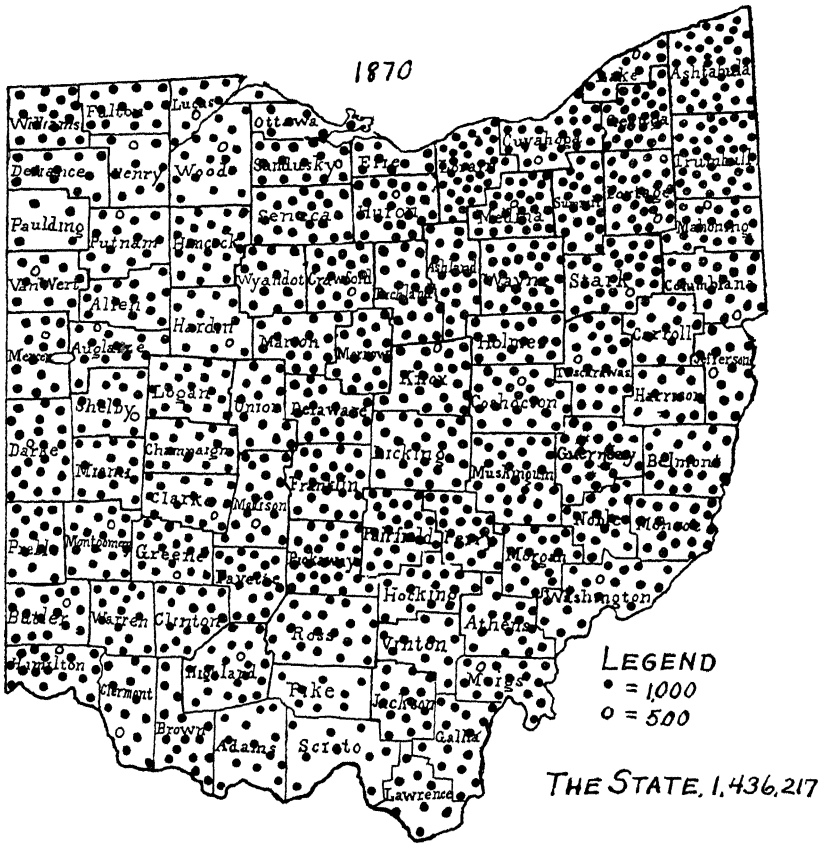
Many thousands driven to market.—The building of the through railroads was bringing about many changes in cattle feeding in the State. During the previous decades Ohio had occupied a unique position in the beef cattle business. Located on the eastern edge of the corn belt it had been the practice of Ohio feeders to purchase cattle in large numbers in Indiana, Illinois, Missouri and the West, or in the hilly counties of eastern Ohio, drive them to the corn-growing counties of southwestern Ohio there to be fattened before

CATTLE IN OHIO—1860



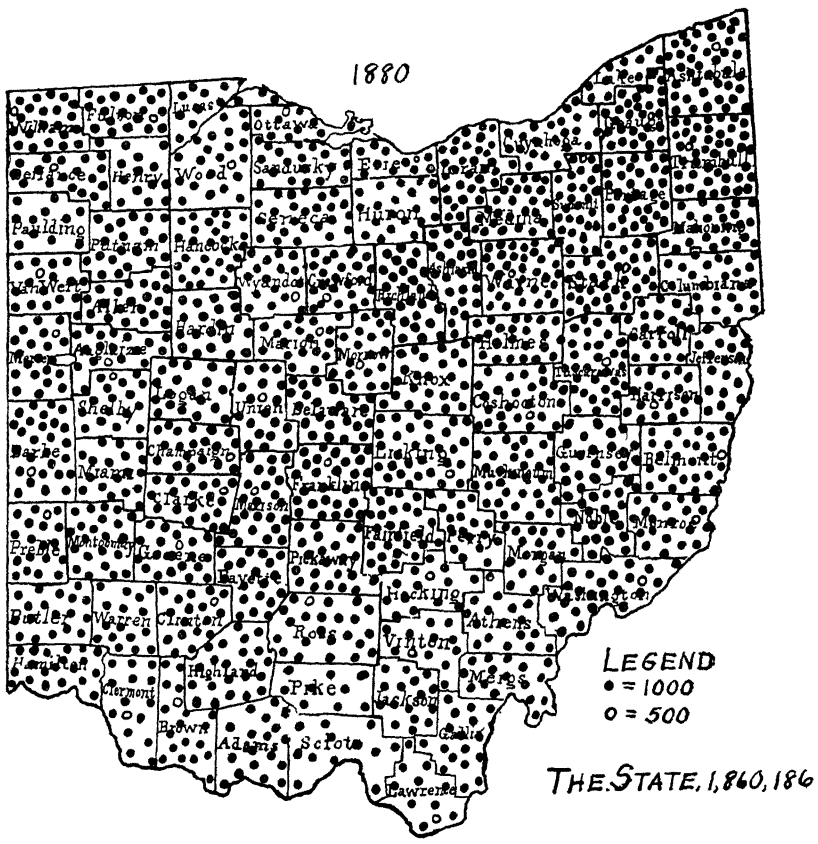
starting on the long overland drive to eastern markets. It was reported from Madison County, in the grazing section, in 1848, that nearly 20,000 head of cattle 3 years old and upward had been sold and driven from that county in 7 months, mostly to New York and Pennsylvania markets. While some cattle from north of the National Road were corn fed and driven to eastern markets, by far the greater number from this northern section and from the eastern counties were only grass fed or slightly corn fed and then sold to drovers from the feeding regions to the south, or sent east across the Alleghanies, where they were sold to eastern feeders or on the Boston, New York, Philadelphia or Baltimore markets as grass-fed beef. By 1850 the driving of fat cattle from the region of the

CATTLE IN OHIO—1870



Scioto had reached its height, by 1860 it had almost ceased. Cattle could now be sent East by railroad from the grazing lands of Illinois without stopping to be fed in Ohio. It was no longer profitable to fatten cattle to such a degree as formerly, now that the long drive across the Alleghenies might be avoided. The practice of stall feeding rapidly decreased. Other markets were opened for corn. Grass was now more relied on than formerly to prepare cattle for the market. There was a tendency to fatten cattle at an earlier age and for a shorter period. The decline of the fat cattle business in the Scioto Valley during the decade 1850 to 1860 led to a decrease in the number of cattle in the grazing counties lying west of the valley. In all other sections of the State there was an increase in the number of cattle.

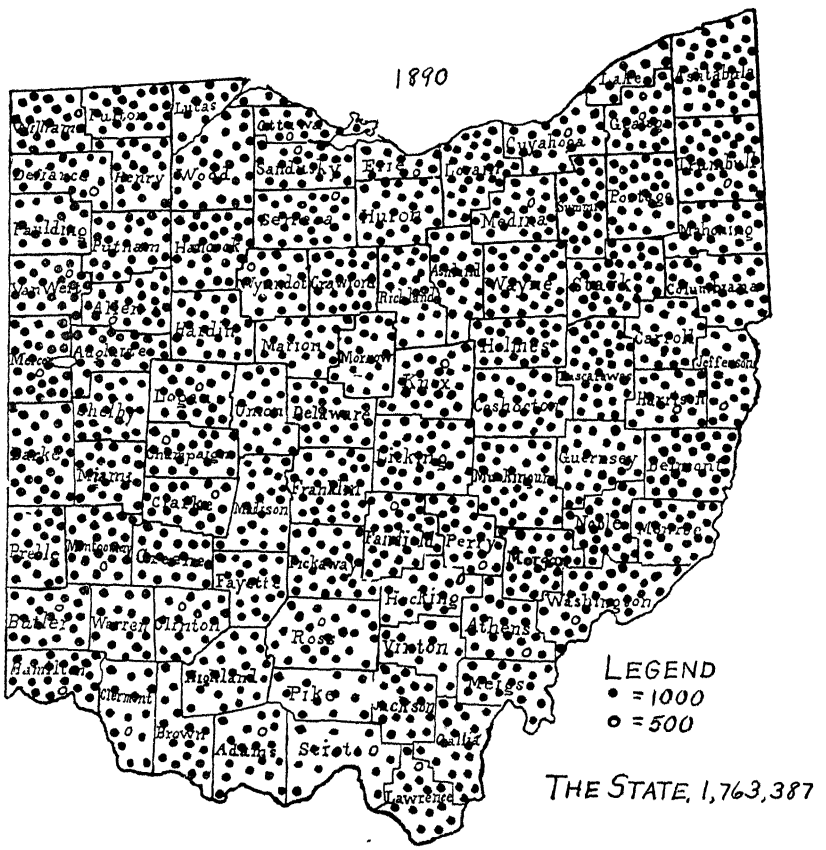
CATTLE IN OHIO—1880



In the northeastern counties dairying continued to be the chief activity of cattle men. During the 'fifties the making of cheese was reported to be decreasing while the manufacture of butter was said to be increasing.

Decrease in cattle followed Civil War.—The decade of the Civil War saw a decrease in the number of cattle, as was true of all other classes of livestock except sheep. In the following decade every county of the State except Jefferson showed an increase. For the State as a whole there was an increase of nearly 30 percent. From 1880 to 1900 there was a decrease in the number of cattle; from 1900 to 1910 there was little change in numbers. Considering the period from 1850 to 1880 the most notable change in numbers had been the increase in northwestern Ohio. There were 278,000 head, or 15

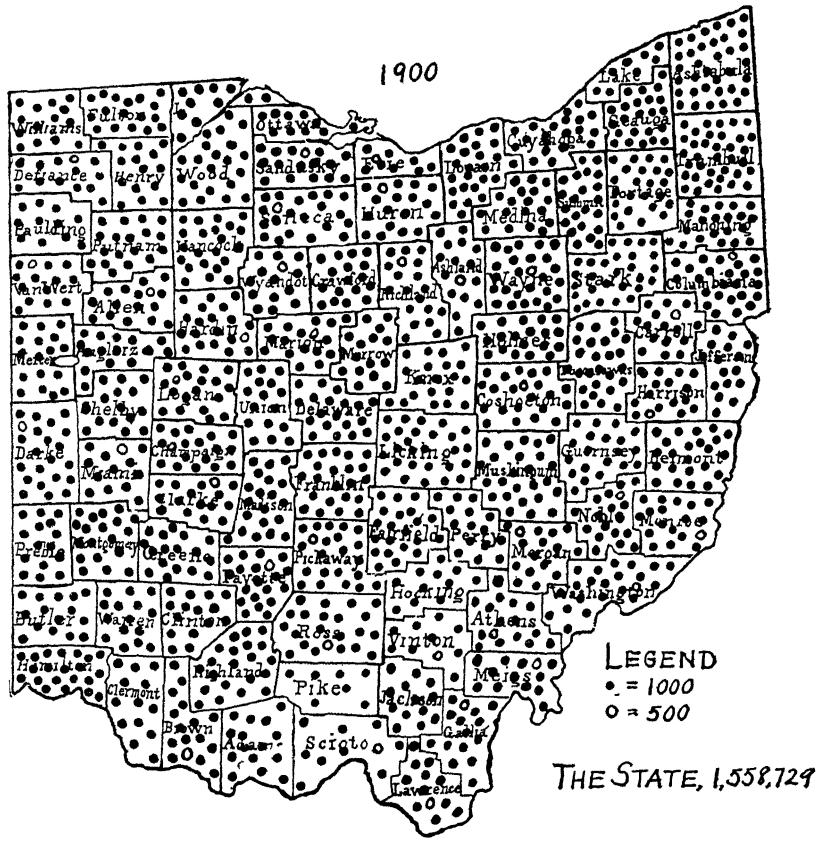
CATTLE IN OHIO—1890



percent more cattle in the State in 1880 than in 1910, only nine counties in the State reporting more cattle on the latter date than on the former. The decrease in number was especially noticeable in the eastern half of the State. That there has been an increase in the relative numbers of dairy cattle will be seen by the dairy map.

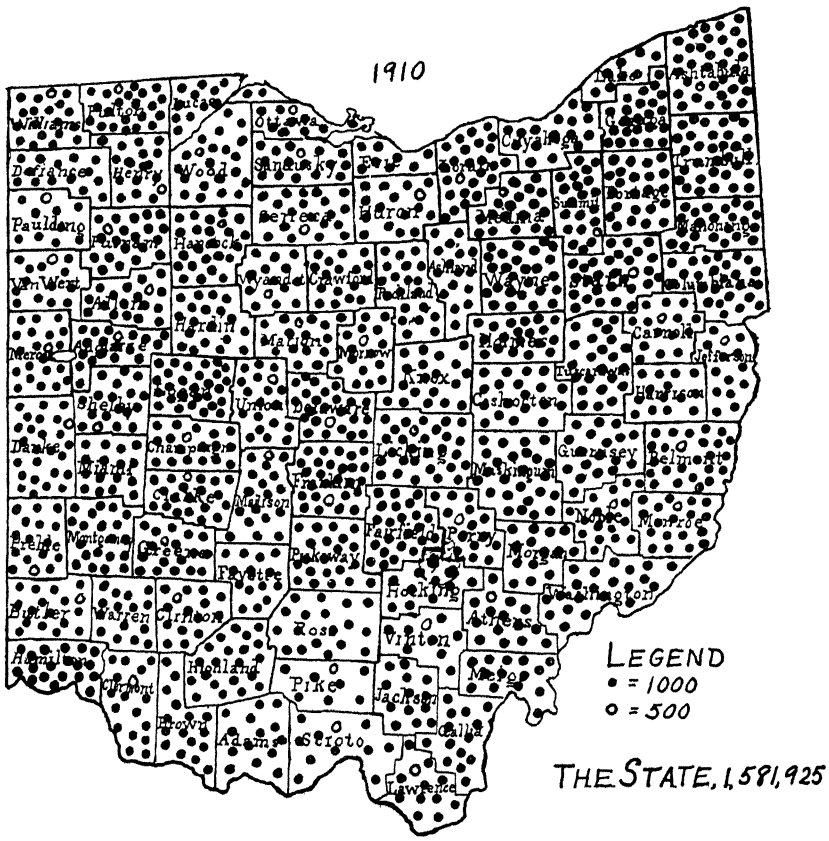
Breeds improved in 1860.—The decade 1850 to 1860 was notable also for a general improvement in the quality of cattle in the State. There had been several importations of purebred cattle, chiefly Shorthorns, previous to 1850. The numbers greatly increased during the next decade. Previous to 1850, however, these improved cattle had been largely concentrated in the hands of a few wealthy farmers. It was not until after that date that they became generally distributed over the State. The development of communication

CATTLE IN OHIO—1900



by railroads, the holding of local and county fairs after 1846 and of the State fair after 1850, together with a generally prosperous condition of agriculture, led to a rapid diffusion of the improved blood over the State. The Shorthorn and the Devon were prominent among the improved breeds during the 'fifties; the Shorthorn in the beef-raising sections and the Devons in the dairy regions of the northeastern counties. At the State fair in 1857 the cattle exhibit comprised 121 Shorthorns, 52 Devons and 7 Ayrshires. In 1877 there were 117 Shorthorns, 49 Devons, 8 Herefords, 9 Ayrshires and 9 Alderneys or Jerseys. Ten years later, in 1887, there were 57 Shorthorns, 45 Jerseys, 24 Holsteins, 23 Devons, 19 Ayrshires and 10 Herefords. Since 1880 the increase of the improved breeds has been rapid and widespread.

CATTLE IN OHIO—1910



PART III

CROP PRODUCTION IN OHIO SINCE 1850

CHAS. E. THORNE

INTRODUCTION

Since 1850 the township assessors of Ohio have been charged with the collection of statistics of crop production. As these statistics were obtained at the same time that the assessor was collecting information upon which to base taxation, and were generally recorded upon the back of the same sheet with the record of taxable property, very many farmers have imagined that the crop statistics also were being collected for taxation purposes. The consequence has been that the recorded crop yields have been generally lower than the yields actually obtained.

The data for the National census have been taken by other persons than the assessors, and it is found that the census figures for the area in each of the principal crops are generally from 8 to 20 percent higher than the State figures for the same year, while the census figures for yield per acre are from 4 to 7 percent higher than the State figures.

This point does not affect the comparisons between different sections of the State nor between different periods, as the lower estimates have not been confined to any particular region.

A fault in these statistics of greater consequence is that in many cases gross errors have been permitted to pass undetected in course of publication. Many of these errors it is possible for an experienced statistician to detect on sight, while many more have been sifted out by our method of computation, in which the average yields of the principal crops have been mapped by counties for each of the 60 years under review. When the map has shown a marked variation in any county from its previous and subsequent records and from those of surrounding counties having similar soil and climatic conditions it has usually been possible to discover that a mistake has been made in addition, or in the placing of a decimal point, and thus to bring the records into harmony.

Notwithstanding these sources of error, the record as a whole must be accepted as presenting a picture of the course of agriculture in Ohio of incomputable value. Having this record before us and having by its side the demonstration of the possibilities of Ohio's soils, as shown by the work of the experiment farms scattered over the State, the next century of our agriculture should make a very different showing from the one that has passed into history.

ADAMS COUNTY

Location.—Adams County lies on the Ohio River in the fourth range of counties from the west line of the State. It is bounded on the north by Highland and Pike; on the east by Scioto; on the south by the Ohio River and Lewis and Mason Counties, Kentucky; on the west by Clermont. Area, 546 square miles. Organized in 1797.

Geology.— The surface rocks over the larger part of the county are limestones belonging to the Clinton and Niagara formations, with extensions of the Waverly shales into the eastern side of the county, small areas of Lower Helderburg or Waterlime in the northeastern corner, and Richmond shales and limestones in the southwestern corner and in the Brushcreek valleys.

Topography.—The county is rolling and hilly over the northern and western parts and very rough and broken over the eastern and southern portions and along the valley of Ohio Brushcreek, which traverses the middle of the county from north to south, with a branch coming in from the northwest.

Soils.—With the exception of a small area of glaciation in the northwestern corner and the narrow belts of alluvium along the streams the soils have been formed by the decomposition of the underlying rocks, modified, however, by a deposit of loess over the more level portions. The resultant soils are classified as (1) Colbert silt loam, tentatively named after a residual limestone soil of Alabama, and covering a broad belt extending through the middle of the county from north to south and southwest; (2) Cincinnati silt loam, occupying the northwestern quarter; (3) De Kalb silt loam, overlying the Waverly rocks on the eastern side; (4) Brush clay, occupying parts of the hillsides along the creek and river valleys, and (5) the alluvium of the bottom lands.

Agriculture.—The statistics of crop production for Adams County show that corn is the leading crop, but the yield per acre, which has averaged only a small fraction over 25 bushels for 60 years, and less than that for the latter half of this period, is too low to afford reasonable wages and any interest on investment in land and equipment, and in the case of oats and wheat the conditions are still less encouraging.

The livestock statistics of Adams County show a decrease in the number of farm animals since the 'sixties equivalent to nearly 12,000 cattle, while the purchase of commercial fertilizers, beginning about 35 years ago, has reached an average of more than 1,800 tons for the period 1900 to 1909. The manure produced by 12,000 cattle during the 6 months of winter feeding would have contained more phosphorus and about fifteen times as much nitrogen and potash as probably was contained in the fertilizers purchased.

The average crop yields of the hill counties of southern Ohio are kept at a low level by the cultivation of hillsides that should have been left in forest or pasture, and by the neglect of drainage on the level table lands. There can be no reasonable doubt that the yield of this region can be largely and profitably increased.

ADAMS COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	20,309	20,750	24,005	26,093	26,328	24,755
White	20,204	20,377	23,662	25,687	26,051	24,570
Negro	105	373	343	406	277	184
Foreign born	603	541	450	344	226	123
Rural	20,309	20,750	24,005	26,093	26,328	24,755
Urban	.....	.....	.....	.....	.....	.....

Population of cities or towns, 1910: Manchester, 1,966; West Union, 1,080.

FARMS: U. S. Census

Farms: U. S. census	1880	1890	1900	1910
Approximate land area.....Acres..	.....	.....	.....	349,440
Land in farms.....Acres.	329,767	313,535	325,125	327,409
Improved land in farms.....Acres.	193,201	200,427	212,928	219,708
Woodland in farms.....Acres..	127,259	113.108	112,197	80,833
Other unimproved land in farm.....Acres.	9,307			26,868
Total number of farms.....Number.	2,837	2,870	3,533	3,634
Area of average farm.....Acres..	112.7	109.2	92.1	90.1
Improved land per farm.....Acres.	68.1	69.8	60.3	60.5
Value of all property per farm.....Dollars.	2,263	2,353	1,882	2,864
Value of land and buildings per farm.....Dollars..	1,953	1,983	1,509	2,298
Value of land and buildings per acre.....Dollars..	17.33	18.16	16.39	25.50

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1870-69	1870-79	1880-89	1890-99	1900-09
Horses.....Number..	6,199	7,226	6,461	5,554	5,307	4,670
Cattle.....Number..	13,436	14,621	12,867	13,334	9,804	10,194
Sheep.....Number..	18,976	25,025	12,021	16,163	10,743	7,026
Hogs.....Number..	29,878	28,194	23,361	15,210	†11,537	9,499
Cattle equivalent* Total.....	24,520	27,169	22,866	22,025	17,339	15,516
Cattle equivalent* Per 1,000 acres.....	.....	.....	118	110	81	75

*Computing 10 sheep or hogs as equivalent to 1 horse or cow.

FARM CROPS: 10-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-10
Corn.....Acres..	28,321	30,729	34,103	30,518	35,397	34,590
Bushels..	819,792	766,842	888,086	705,506	840,649	841,456
Bushels per acre..	27.9	25.0	26.0	23.1	23.8	24.3
Oats.....Acres..	5,427	6,936	8,245	5,030	2,581	3,292
Bushels..	54,623	120,293	124,564	67,825	33,678	53,606
Bushels per acre..	10.1	17.3	15.1	13.4	13.0	16.3
Wheat.....Acres..	24,331	23,684	16,310	19,456	23,338	18,434
Bushels..	254,129	194,443	124,547	170,564	235,007	169,407
Bushels per acre..	10.4	8.2	7.6	8.8	10.1	9.2
Rye.....Acres..	75	247	198	183	393	669
Bushels..	866	1,850	1,226	1,032	2,554	4,362
Bushels per aere..	11.5	7.5	6.2	5.6	16.5	6.6
Meadows.....Acres..	5,787	7,773	8,161	12,741	14,890	12,397
Tons..	5,567	6,637	6,375	11,490	11,762	11,995
Tons per acre..	0.96	0.86	0.78	0.90	0.79	0.96
Clover.....Acres..	.....	5,683	2,241	4,743	5,663	3,922
Tons..	.....	1,077	552	1,986	3,220	3,056
Tons per acre..	.....	0.19	0.25	0.42	0.57	0.78
Pasture.....Acres..	.....	.....	55,597	75,297	93,094	97,305
Potatoes.....Acres..	.....	392	435	474	345	354
Bushels.	.....	21,132	26,133	29,383	20,760	21,198
Bushels per acre..	.....	53.9	60.1	62.0	60.0	59.9
Orchards.....Acres..	.....	3,437	3,831	4,130	3,785	2,300
Apples.....Bushels..	.....	87 163	145,351	162,426	98,620	46,577

ALLEN COUNTY

Location.—Allen County is in the northwestern quarter of the State. Bounded on the north by Putnam; on the east by Hancock and Hardin; on the south by Auglaize; on the west by Van Wert. Area, 406 square miles. Organized in 1820.

Geology.—The surface rock in Allen County is Waterlime, except a small area of Niagara in the southeastern corner. The rock is covered by a heavy sheet of glacial drift which, having been accumulated in the sweep of the glacier over limestone formations, contains much calcareous material. Allen County contains one of the earliest discovered and most extensive oil fields in the State.

Topography.—The topography of Allen County is that common to the northwestern quarter of the State, a level to flat plain, with a few small areas of gently rolling land along the borders of the streams. The drainage is chiefly to the north, through streams leading into the Maumee, but the southwestern corner of the county drains into the Scioto.

Soils.—The soils of the county have been formed by the decomposition of the drift and consist of Miami silt loam and Miami clay loam as the predominant type over the southern half of the county with the Clyde clay over the northern half, areas of the two formations, however, being interspersed over the entire county.

Agriculture.—Corn is the leading crop, occupying an area nearly equal to that of wheat and oats combined except during the 20 years, 1880 to 1899, during which a larger area was given to wheat than previously, but with the last decade the wheat area was reduced and the former ratio was resumed. During this decade, however, there has been a marked increase in the area given to oats.

Corn and oats show a general increase in yield per acre throughout the entire 60 years. Wheat reached its maximum yield during the 10 years, 1890 to 1899, but a succession of unfavorable seasons during the last decade has reduced the yield and several thousand acres of the area previously given to wheat has been transferred to oats.

The livestock of the county has decreased by the equivalent of 8,000 cattle since the 'eighties, while the purchase of fertilizers has averaged 446,000 pounds annually during the last decade, a quantity sufficient to carry less than one-fifth the fertilizing elements that would have been contained in the winter manure of 8,000 cattle.

ALLEN COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	19,185	23,623	31,314	40,644	47,976	56,580
White	19,115	23,410	30,800	40,049	47,126	55,544
Negro	70	213	510	589	842	1,030
Foreign born	1,594	2,066	2,402	3,186	2,554	2,395
Rural	.....	.....	.....	.....	23,964	23,516
Urban	.....	.....	.....	.....	24,012	23,064

Population, 1910; Lima, 30,508; Delphos, 2,556 (also 2,482 in Van Wert County) Bluffton, 1,953 Spencerville, 1,748.

FARMS: U. S. Census

Farms: U. S. census		1880	1890	1900	1910
Approximate land area	Acres..	.....	.....	.....	259,840
Land in farms	Acres..	249,704	233,962	245,283	240,472
Improved land in farms	Acres..	163,020	178,508	196,465	203,222
Woodland in farms	Acres..	82,526	}		32,316
Other unimproved land in farm	Acres..	4,158	55,454	48,818	4,934
Total number of farms	Number..	2,637	2,612	2,858	2,939
Area of average farm	Acres..	94.7	89.6	85.8	81.8
Improved land per farm	Acres..	61.8	68 3	68.7	69.1
Value of all property per farm	Dollars..	4,748	5,609	4,812	8,844
value of land and buildings per farm	Dollars..	4,211	4,945	4,152	7,743
Value of land and buildings per acre	Dollars..	44.46	55.21	48.39	94.66

LIVESTOCK: Ten year average numbers: Ohio statistics

		1850-59	1860-69	1870-79	1880-89	1890-99	1900-90
Horses	Number..	*4,793	†7,233	8,447	8,523	8,898	6,333
Cattle	Number..	12,274	13,543	16,807	16,736	13,308	13,165
Sheep	Number..	15,156	38,867	28,844	29,138	22,731	15,847
Hogs	Number..	20,980	26,113	30,922	26,452	22,660	21,729
Cattle equivalent	Total	20,689	27,274	31,230	30,818	26,745	23,255
	Per 1,000 acres	.....	.....	193	156	136	114

*9-year average. †8-year average.

FARM CROPS; 10-year averages: Ohio statistics

		1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn	Acres..	16,484	22,726	30,567	31,967	34,400	36,049
	Bushels..	484,678	647,913	1,838,258	1,150,405	1,171,754	1,460,774
	Bushels per acre..	30.0	28.4	36,6	35.9	34.1	40.5
Oats	Acrss..	4,777	5,754	9,472	9,307	11,233	15,933
	Bushels..	81,714	142,331	284,967	307,579	312,151	539,294
	Bushels per acre..	17.1	24.8	30.1	33.1	27.8	33.8
Wheat	Acres..	12,968	17,416	21,665	29,234	29,840	21,834
	Bushels..	150,805	179,875	298,831	375,529	446,764	291,210
	Bushels per acre..	11.6	10.3	13.8	13.0	15,0	13.3
Rye	Acres..	566	799	330	334	704	1,12
	Bushels..	5,360	8,036	4,626	4,617	8,620	14,946
	Bushels per acre..	9.5	10.1	14.0	13.9	12 2	13.3
Meadows	Acres..	9,365	11,133	11,098	14,457	21 386	21,200
	Tons..	10,795	11,781	12,644	18,103	22,408	26,670
	Tons per acre..	1.15	1.06	1.14	1,25	1.05	1.26
Clover	Acres..	.....	4,553	6,890	8,660	9,002	10,139
	Tons..	.....	4,243	6,318	7,947	10,561	13,505
	Tons per acre..	.....	0.93	0.92	0.92	1.17	1.33
Pasture	Acres..	.....	.....	23,081	26,67	25,793	48,582
Potatoes	Acres..	....	651	960	1,347	1,077	698
	Bushels	.....	42,244	74,452	103,020	57,929	55,259
	Bushels per acre..	.....	34,6	77,6	76.5	54 1	79.2
Orchards	Acres..	.....	3,553	3,823	3,600	3,124	2,167
Apples.....	Bushels..	.....	139,152	163,023	112.887	57,567	33,656

ASHLAND COUNTY

Location.—Ashland County is located in the northeast quarter of the State. Bounded on the north by Huron, Lorain and Medina; on the east by Medina, Wayne and Holmes; on the south by Holmes, Knox and Richland; on the west by Richland and Huron. The county is 35 miles in length, from north to south, and 15 miles in width. Area, 421 square miles. Organized in 1846.

Geology.—With the exception of a small area of the upper coal measures and sub-carboniferous conglomerate in the southern end of the county, the surface rocks in Ashland County are the argillaceous Cuyahoga shales of the Waverly series.

Topography.—The surface of Ashland County is that of a gently rolling plateau, of an average altitude of 1,000 to 1,200 feet above the sea, through which broad drainage channels have been cut to the depth of 300 to 400 feet by glacial and post glacial agencies. Such channels are occupied by Jerome Fork, which rises in the divide between lake and river drainage near the northwestern corner of the county, unites with Muddy Fork, on the eastern side of the county, to form the Mohican and flows out to the southeast, and by Black Fork, which crosses the southwestern corner of the county from west to east, entering the Mohican near the junction of Ashland, Holmes and Knox Counties.

Soils.—The entire county has been overrun by the ancient glaciers, which have reworked and redistributed the soil, but its characteristics are chiefly due to the underlying rock. In the reconnaissance soil survey the soil of the southern two-thirds of Ashland County, together with the southeastern half of Richland and the southwestern half of Wayne, has been classed as Wooster silt loam, while the northern part of the three counties is included in the Volusia series.

Agriculture.—The statistics of crop production for Ashland County indicate that a fairly systematic scheme of crop rotation is being followed, in which clover is being increasingly grown. The maximum yields per acre, however, were attained by corn during the 'seventies and by oats and wheat during the 'eighties, although the wheat yield has varied but slightly for 40 years.

The statistics of animal production show that the livestock of the county reached its maximum during the 'sixties, and has been steadily declining since, the number found in the county during the last decade being less by the equivalent of 16,000 cattle than during the 'sixties. During the last decade the farmers of Ashland County purchased an annual average of 1,550 tons of commercial fertilizers. The approximate quantities of fertilizing elements which might have been recovered in the winter manure of 16,000 cattle and which were presumably contained in the fertilizers purchased are shown below:

	Nitrogen Lbs.	Phosphorus Lbs.	Potassium Lbs.
80,000 tons manure	800,000	200,000	720,000
1,550 tons fertilizers	31,000	108,000	40,000

ASHLAND COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	22,951	21,933	23,883	22,223	21,184	22,975
White	22,935	21,907	23,843	22,202	21,170	22,950
Negro	16	26	40	21	14	25
Foreign born	1,437	1,215	1,089	796	607	622
Rural					17,097	16,180
Urban					4,087	6,795

Population, 1910: Ashland, 6,795; Loudonville, 1,804.

FARMS: U. S. Census

Farms: U. S. census	1880	1890	1900	1910
Approximate land area—Acres				269,440
Land in farms—Acres	259,715	255,128	254,689	258,525
Improved land in farms—Acres	200,594	205,130	202,677	203,110
Woodland in farms—Acres	57,155	49,998	52,012	41,131
Other unimproved land in farm—Acres	1,946			14,284
Total number of farms—Number	2,616	2,776	2,631	2,667
Area of average farm—Acres	99.3	91.9	96.8	96.9
Improved land per farm—Acres	76.7	74.0	77.0	76.2
Value of all property per farm—Dollars	4,941	5,709	4,566	7,034
Value of land and buildings per farm—Dollars	4,358	5,046	3,891	5,989
Value of land and buildings per acre—Dollars	43.89	54.91	40.20	61.81

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses—Number	3,035	8,396	8,410	8,044	7,746	5,903
Cattle—Number	19,882	19,571	20,599	19,615	13,635	12,746
Sheep—Number	79,492	94,149	58,164	55,204	40,417	31,538
Hogs—Number	25,441	22,324	32,997	19,893	15,024	14,139
Cattle equivalent—Total	33,410	39,614	37,125	35,169	26,925	23,217
Cattle equivalent—Per 1,000 acres			185	171	133	114

FARM CROPS: 10-year average production: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn—Acres	17,167	19,693	23,574	22,547	23,045	23,859
Bushels	503,698	597,890	931,756	702,062	727,869	872,131
Bushels per acre	29.5	30.3	39.5	31.1	31.3	36.6
Oats—Acres	13,461	13,575	17,055	15,517	16,757	20,180
Bushels	308,258	404,716	557,710	543,783	540,870	643,829
Bushels per acre	22.9	29.8	32.7	35.0	32.3	31.9
Wheat—Acres	24,109	21,601	26,744	36,989	34,939	27,716
Bushels	307,101	264,871	413,814	587,161	549,948	430,636
Bushels per acre	12.7	12.2	15.5	15.9	15.7	15.5
Rye—Acres		1,397	382	238	394	426
Bushels		16,149	4,567	2,501	3,992	5,341
Bushels per acre		11.6	11.9	10.5	10.1	12.5
Meadows—Acres	22,760	22,736	20,844	19,340	23,813	27,073
Tons	28,843	28,450	23,451	24,842	31,192	33,692
Tons per acre	1.27	1.25	1.13	1.28	1.31	1.24
Clover—Acres		8,132	10,360	12,426	12,310	14,501
Tons		7,651	9,616	14,397	14,674	18,925
Tons per acre		0.94	0.93	1.16	1.19	1.31
Pasture—Acres			51,609	48,237	40,108	60,055
Potatoes—Acres		966	1,088	1,109	1,119	993
Bushels		79,724	93,153	116,861	88,371	94,254
Bushels per acre				105.4	79.0	94.9
Orchards—Acres		4,478	5,008	4,526	3,957	3,244
Apples—Bushels		181,097	222,129	159,415	96,681	94,188

ASHTABULA COUNTY

Location.—Ashtabula is the northeastern county of the State. Bounded on the north by Lake Erie; on the east by Erie and Crawford Counties, Pennsylvania; on the south by Trumbull; on the west by Lake and Geauga. Area, 723 square miles. Organized in 1807.

Geology.—The surface rock in southeastern and southwestern Ashtabula County is the Berea Grit, a moderately coarse sandstone. This is bordered by outcrops of Bedford and Cleveland shales, and these are succeeded by the Erie shales which cover the larger part of the county. These shales are close-grained, argillaceous rocks almost impervious to water, and weather into stiff, heavy clays. The county lies within the glaciated region, but a strip 2 to 3 miles wide bordering the lake is occupied by ancient beaches, thrown up since the glacial epoch, but at a time when the level of the lake was much higher than at present.

Topography.—The general topography of the county is gently rolling, with a few small areas of more hilly land. The streams have cut deep channels, and their banks in many places are quite steep.

Soils.—While the soils of the region south of the lake beaches have been modified by glacial action, they owe their character largely to the underlying rock. The prevailing soil type of this region is the Volusia, ranging from silt loam to clay loam, and as a rule drainage is very deficient. The sandy soils of the lake beaches are more porous, and are valued much more highly than those in the interior of the county, but over a large part of the interior the soil is cold and heavy, and better adapted to grass than to the cereal crops.

Agriculture.—Dairying is the predominant industry in Ashtabula County, the statistics showing that more milch cows are kept in this county than in any other one in the State excepting Trumbull. Both the soil and the location favor this industry, as the county lies within a night's transportation of Cleveland, Pittsburg and Buffalo, with direct rail communication to each city. In common with all the other counties of the State, however, Ashtabula County has experienced a decrease in the number of cattle as well as of other farm animals, the number equivalent to cattle per thousand acres of improved land falling from 158 during the 'eighties to 137 during the last decade. That this last figure is not still lower is due to the apparent abandonment of some of the land, the area reported as improved falling from 332,583 acres in 1880 to 261,685 acres in 1910, while the woodland and other unimproved land was reported as 99,621 acres in 1880 as against 137,502 acres in 1910.

The decrease in the number of cattle kept in Ashtabula County has been partly due to the shifting of the dairy industry from cheese making to the selling of milk, a shifting due in part to the growth of cheese making in Wisconsin and in part to the rapid increase of nearby urban populations. The township assessors' returns show that in 1870 Ashtabula County produced 5,758,000 pounds of cheese and 961,355 pounds of butter, as against 1,002,681 pounds of cheese and 1,052,931 pounds of butter in 1914.

The statistics of crop production show an increasing rate of yield during the first three decades of the period under review, followed by a decline in the yield of the cereal crops, although the hay yields continue to increase. It is notable that the hay crops occupy as much land as the cereal crops combined.

The livestock population reached its maximum during the 'sixties, when it averaged the equivalent of 53,000 cattle. From that time it declined with each

decade, averaging less than the equivalent of 36,000 cattle during the last decade. There was therefore a decerase in the number of livestock kept in the county equivalent to 17,000 cattle.

This number of cattle should have produced 85,000 tons of manure during the 6 months of winter feeding, which would contain approximately 850,000 pounds of nitrogen, 220,000 pounds of phosphorus and 760,000 pounds of potassium. Furthermore, the assessors' returns show that in 1915 the sales of milk in Ashtabula County aggregated more than 100,000,000 pounds. This quantity of milk would have carried 560,000 pounds of nitrogen, 83,000 pounds of phosphorus and 140,000 pounds of potassium. To replace this deficiency in fertilizing elements Ashtabula County farmers have purchased an annual average for the last 30 years of about 4,000,000 pounds, or 2,000 tons, of commercial fertilizers, which have probably carried approximately 40,000 pounds of nitrogen, 140,000 pounds of phosphorus and 60,000 pounds of potassium.

This quantity of fertilizers would have given less than 80 pounds annually to each acre in cultivated crops, and the manure produced during the winter from the cattle still retained in the county would have afforded about 2 tons annually per acre. This treatment seems to have barely maintained the yield of the land.

In the manufacture of cheese a considerable part of the mineral elements contained in the milk is retained in the whey, and in butter-making practically all the minerals remain in the buttermilk; so that in these industries most of the fertilizing elements remain on the farm; but when the milk is sold off the farm these elements go with it, so that in this way, and in the increasing amounts of hay and grain sold off the farm instead of being fed, there has been during these last 30 years a drain on the fertility of Ashtabula County's soil far exceeding the amount returned in commercial fertilizers.

Computed on the total land area, and rating corn at half a dollar a bushel; oats at one-third of a dollar; wheat and rye at a dollar; apples and potatoes at half a dollar; hay at ten dollars a ton and pastures at four dollars an acre, the annual value of the principal farm crops of Ashtabula County for the 4 decades, 1870-79, 1880-89, 1890-99 and 1900-09, has been respectively $6,157; $7,080; $8,309; and $7,987, for 1,000 acres of improved land in farms.

At the Strongsville farm of the Experiment Station, which is located on a soil very similar to that of the larger part of Ashtabula County, and in nearly the same latitude, acid phosphate, applied at the rate of 80 pounds per acre each on corn and oats and 160 pounds on wheat in a rotation of corn, oats, wheat and clover, and following a dressing of 2 tons of ground limestone on every corn crop, has maintained a 12-year average yield per acre of 34 bushels of corn, 43 bushels of oats, 18½ bushels of wheat and 1.62 tons of clover hay.

When yard manure has been used instead of acid phosphate and at the rate of 4 tons each on corn and wheat, equivalent to 2 tons annually, the yields have been 40 bushels of corn, 45 bushels of oats, 18½ bushels of wheat and 1.74 tons of hay per acre.

When this dressing of manure has been doubled the yields have been increased to 45 bushels of corn, 47 bushels of oats, 21 bushels of wheat and 1.86 tons of hay. Such yields as these on the present acreage would increase the value of the annual produce of Ashtabula County to more than $10,000 for every thousand acres of improved land.

There is no reason to doubt that the yield of Ashtabula County's land might be very materially and very profitably increased by drainage, liming, and a more liberal use of manure and fertilizers.

LIME AND FERTILIZERS ON STRONGSVILLE LAND

In 1895 an experiment was begun at Strongsville, Cuyahoga County, in the use of fertilizers and manure on land that had lain in pasture for about 25 years, the fertilizer dressing being divided between the corn, oats and wheat and the manure between the corn and wheat. The crops were grown in a 5-year rotation of corn, oats, wheat, clover and timothy, each crop being grown every season. Part of the land was left continuously without any manure or fertilizer for comparison.

After 10 years finely ground limestone was added to the treatment, being spread over all the land, fertilized or manured and unfertilized alike, as the land was being prepared for corn, thus using the limestone once in 5 years. It was applied at the rate of 2 tons per acre.

Some of the results of this treatment are shown in the following table, which gives the average value of the total produce of each 5-year rotation for the 10 years when no lime was given and for a period of about 12 years, during which the land was limed, the valuations being computed on the basis of prices prevailing before the European war.

While these comparisons between limed and unlimed land were not made the same seasons, the large increase in the yield of the unfertilized land during the second period indicates that the liming has been a very important factor in maintaining yields, and the experiment as a whole shows that it is practicable to greatly increase the net return from this land.

FERTILIZERS, MANURE and LIME on Strongsville land. Value of total produce, cost of treatment and net gain or loss for each 5 year rotation:

Treatment per acre for each 5-year rotation	Value of produce		Cost of treatment		Net value	
	Before liming	After liming	Before liming	After liming	Before liming	After liming
Acid phosphate, 320 lbs	$63.68	$79.95	$2.24	$8.24	$61.44	$71.71
Acid phosphate, 320 lbs. Muriate of potash, 260 lbs.	68.40	85.37	8.74	14.74	59.66	70.63
Acid phosphate, 320 lbs. Muriate of potash, 260 lbs. Nitrate of soda, 480 lbs.	76.93	95.42	23.14	29.14	53.79	66.37
Acid phosphate, 480 lbs. Muriate of potash, 260 lbs. Nitrate of soda, 240 lbs.	73.69	101.20	17.06	23.06	56.63	78.14
Yard manure, 16 tons	70.52	100.97	8.00	14.00	62.52	86.97
No treatment*	46.31	60.19	.....	6.00	46.31	54.19

*Except liming, second period.

ASHTABULA COUNTY STATISTICS

POPULATION. U. S. Census

	1860	1870	1880	1890	1900	1910
Total	31,814	32,517	37,139	43,655	51,448	59,547
White	31,789	32,365	36,875	43,365	51,204	59,328
Negro	25	151	263	290	239	217
Foreign born	1,703	2,217	2,814	4,833	6,771	8,449
Rural	.....	.....	.....	....	31,366	32,962
Urban	.....	.....	.....	....	20,082	26,585

Population of cities or towns, 1910: Conneaut, 8,319; Geneva, 2,496; Jefferson, 1,461.

FARMS: U. S. Census

Farms; U. S. census	1880	1890	1900	1910
Approximate land area ..... Acres..	.....	.....	.....	462,720
Land in farms ..... Acres..	432,204	391,572	416,963	399,187
Improved land in farms ..... Acres.	332,583	307,192	244,013	261,685
Woodland in farms ..... Acres..	89,198	84,380	172,950	61,492
Other unimproved land in farms ..... Acres..	10,493			76,010
Total number of farms .... Number..	4,637	4,856	5,038	4,926
Area of average farm ..... Acres..	93.2	80.6	82.8	81.0
Improved land per farm ..... Acres.	71.7	63.3	48.4	53.1
Value of all property per farm ..... Dollars..	3,725	3,414	3,127	4,567
Value of land and buildings per farm ..... Dollars..	3,274	2,917	2,632	3,839
Value of land and buildings per acre ..... Dollars..	35.14	36.19	32.66	47.40

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses ..... Number..	6,875	9,206	9,049	9,959	10,690	7,563
Cattle ..... Number..	38,339	35,023	37,777	34,973	24,237	27,064
Sheep ..... Number..	41,587	83,429	28,527	31,659	24,798	8,792
Hogs ..... Number..	6,036	5,515	5,892	5,468	5,119	3,727
Cattle equivalent Total	49,976	53,123	50,268	48,644	37,955	35,879
Cattle equivalent Per 1,000 acres	.....	.....	151	157	156	137

FARM CROPS: 10 year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn ..... Acres.	9,931	11,097	12,989	13,639	14,140	14,483
Bushels..	331,874	412,097	558,275	404,538	437,739	386,871
Bushels per acre..	33.4	36.9	43.2	28.9	30.9	26.7
Oats ..... Acres .	6,232	9,996	16,160	20,095	22,113	23,558
Bushels..	734,232	296,754	557,532	699,849	648,942	752,221
Bushels per acre..	21.5	29.7	34.5	34.8	29.3	31.9
Wheat ..... Acres..	5,137	6,316	8,880	16,525	13,330	7,204
Bushels..	66,230	92,022	123,847	238,474	203,778	96,650
Bushels per acre..	12.9	14.5	13.9	14.4	15.3	13.4
Rye ..... Acres.	1,066	410	181	309	756	1,020
Bushels..	7,748	5,277	2,121	3,920	7,786	14,295
Bushels per acre..	7.2	12.9	11.2	12.7	13.0	14.0
Meadows ..... Acres..	48,494	49,067	49,831	46,398	46,505	51,547
Tons..	54,041	56,998	58,348	60,336	60,191	67,402
Tons per acre..	1.11	1.16	1.17	1.30	1.29	1.31
Clover ..... Acres..	....	766	801	3,524	1,831	1,290
Tons..	.....	1,137	1,117	4,368	2,368	1,904
Tons per acre	.....	1.48	1.39	1.24	1.29	1.48
Pasture ..... Acres..	.....	.....	139,256	145,921	129,740	141,320
Potatoes ..... Acres..	.....	1,909	3,279	2,854	3,073	3,976
Bushels..	.....	217,233	312,896	209,696	300,862	325,668
Bushels per acre..	.....	113.8	954	73.5	81.9	81.9
Orchards ..... Acres..	....	5,267	5,525	5,872	4,389	4,125
Apples ..... Bushels..	.....	170,225	302,464	318,336	168,195	231,048

ATHENS COUNTY

Location.—Athens County is in the southeastern quarter of the State. Bounded on the north by Hocking, Perry and Morgan; on the east by Washington and Morgan; on the south by Meigs and on the west by Vinton and Hocking. Area, 487 square miles. Organized in 1805.

Geology.—Athens County lies within the productive coal measures and south of the glaciated region. The surface rocks are the limestones, sandstones and shales of the coal measures.

Topography.—In common with the other southeastern counties, the surface of Athens County has been carved into hills and valleys by glacial torrents and by the Hocking River, which crosses the county diagonally from the northwestern corner to the southeastern, emptying into the Ohio within the few miles of frontage which Athens County has on that river.

Soils.—The principal soil type in Athens County is the DeKalb silt loam, which covers a large area in southeastern Ohio, and which has been formed from the weathering of sandstones. Intermingled with this type are small areas of the red "Upshur clay" and other soils derived wholly or in part from limestones. Wherever limestone has entered into the composition of the soil its quality is improved, especially for the growing of clover and pasture grasses.

Agriculture.—The statistics of crop production show that there has been a steady decrease in the area given to each of the cereal crops during the 60 years under review, interrupted it is true by a temporary recovery of corn and wheat during the 'seventies. The rate of yield per acre has averaged 32.2 bushels for corn, rising a little above that mark during the 'sixties and falling below it during the 'nineties. Oats has averaged 17.4 bushels for the 60 years, a yield too low to pay living wages to the grower. Wheat has averaged 10⅛ bushels for the 60 years, the yields for the last 3 decades being slightly better than for the first 3, but being too low for profit. There has been a great reduction in the area sown to wheat during the last decade.

For 13 years the Experiment Station has operated a test farm at Carpenter, Meigs County, a few miles south of the Athens County line, on a DeKalb silt loam soil.

The tests made on this farm demonstrate the possibility of very greatly increasing the produce of the average Athens County farm, by measures within the reach of every farmer and at a cost which would return very large dividends on the investment.

The livestock statistics show that during the last 30 years there has been a falling off equivalent to more than 12,000 cattle in the number of animals kept in the county, or nearly 50 percent. While the livestock was thus permitted to diminish the purchase of fertilizers increased to an average of about 900 tons for the last decade. The inadequacy of this quantity of fertilizers to compensate the loss of manure due to the diminishing livestock is shown below, assuming a winter production of 5 tons of manure for each head of cattle:

	Nitrogen Lbs.	Phosphorus Lbs.	Potassium Lbs.
60,000 tons manure	600,000	150,000	540,000
700 tons fertilizer	14,000	40,000	15,000

ATHENS COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	21,364	23,768	28,411	35,194	38,730	47,798
White	20,976	22,995	27,236	33,958	37,398	46,552
Negro	388	773	1,175	1,236	1,332	1,246
Foreign born	669	852	1,054	2,045	1,840	2,536
Rural	.....	.....	.....	.....	28,088	33,726
Urban	.....	.....	.....	.....	10,642	14,072

Population, 1910: Athens, 5,463; Nelsonville, 6,082; Glouster, 2,527; Jacksonville, 1,285.

FARMS: U. S. Census

	1880	1890	1900	1910
Approximate land area—Acres	.....	.....	.....	311,680
Land in farms—Acres	294,807	276,175	297,166	286,923
Improved land in farms—Acres	204,543	209,123	229,399	201,673
Woodland in farms—Acres	88,403	67,052	67,767	53,734
Other unimproved land in farm—Acres	1,861			31,516
Total number of farms—Number	2,469	2,630	3,004	2,726
Area of average farm—Acres	119.4	105.0	98.9	105.3
Improved land per farm—Acres	83.9	79.5	76.4	74.0
Value of all property per farm—Dollars	3,455	3,167	2,916	3,731
Value of land and buildings per farm—Dollars	3,045	2,701	2,441	3,100
Value of land and buildings per acre—Dollars	25.50	25.72	24.68	29.44

LIVESTOCK: 10-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses—Number	4,694	6,040	5,844	4,849	5,227	3,008
Cattle—Number	14,547	14,004	14,943	13,265	12,171	8,549
Sheep—Number	31,138	59,489	51,702	90,239	54,365	39,004
Hogs—Number	16,404	14,532	13,747	6,679	4,668	2,195
Cattle equivalent—Total	23,995	27,446	27,332	27,806	23,301	15,677
Cattle equivalent—Per 1,000 acres	.....	.....	134	133	102	78

FARM CROPS: 10-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn—Acres	19,302	18,854	20,151	15,737	15,948	11,568
Corn—Bushels	598,796	769,770	647,259	452,971	457,691	374,196
Corn—Bushels per acre	31.0	35.6	32.1	33.8	28.6	32.3
Oats—Acres	4,109	3,937	3,389	2,107	1,588	1,543
Oats—Bushels	47,689	83,709	58,499	35,554	28,136	30,936
Oats—Bushels per acre	11.6	21.3	17.2	16.8	17.7	20.0
Wheat—Acres	18,547	14,711	15,151	12,855	12,106	7,360
Wheat—Bushels	197,190	120,980	137,492	130,303	158,081	91,089
Wheat—Bushels per acre	10.6	8.2	9.1	10.1	13.1	12.3
Rye—Acres	113	230	177	121	137	59
Rye—Bushels	675	2,096	1,544	1,002	893	528
Rye—Bushels per acre	6.0	9.1	8.7	8.3	6.5	8.9
Meadows—Acres	12,963	14,454	14,469	21,643	21,324	19,700
Meadows—Tons	16,729	17,908	14,196	23,403	22,103	20,857
Meadows—Tons per acre	1.29	1.24	.98	1.08	1.04	1.06
Clover—Acres	.....	618	654	947	780	695
Clover—Tons	.....	706	484	869	946	975
Clover—Tons per acre	.....	1.14	.74	.92	1.21	1.40
Pasture—Acres	.....	.....	80,707	121,910	127,261	119,400
Potatoes—Acres	.....	692	1,028	976	762	441
Potatoes—Bushels	.....	57,583	67,033	57,194	48,091	36,662
Potatoes—Bushels per acre	.....	83.2	65.2	58.6	63.1	83.0
Orchards—Acres	.....	3,653	4,752	5,345	8,336	5,280
Apples—Bushels	.....	118,386	172,788	192,011	86,042	50,691

AUGLAIZE COUNTY

Location.—Auglaize County is near the middle of the second range of counties from the Indiana line, in the northwestern quarter of the State, and is bounded on the north by Allen, on the east by Hardin and Logan, on the south by Shelby and on the west by Mercer Counties. Area, 397 square miles. Organized in 1848.

Geology.—The northern part of the county is underlaid with the Waterlime and the southern part with the Niagara limestones, but the rock is everywhere covered with a thick sheet of glacial drift.

Topography.—With the exception of a few relatively small areas of gently rolling land due to glacial moraines the surface of the county is very level. It is situated near the summit, but chiefly on the north side, of the broad watershed which separates the lake and river drainage, and contains no large streams. The northern part of the county drains through the Auglaize, and the western part through the St. Mary's, into the Maumee, while a small portion of the eastern end of the county is drained by tributaries of the Miami.

Soils.—The prevailing soils of the county are the Miami silt loam and Miami clay loam, with a small area of Clyde clay loam in the northeastern corner and narrow strips of alluvium in the shallow valleys of the Auglaize and St. Mary's Rivers.

Agriculture.—Agriculturally, Auglaize is one of the newer counties of the State, the statistics of crop production showing more than three times as many acres in the principal crops during the last decade as during the 'fifties. The rural population, however, has been practically stationary, the increase in population being found in the towns and villages. During the earlier period the removal of the forest and drainage of the land consumed a large part of the energies of the rural workers, while the development of farm machinery has made it possible to handle more acres per man during the later years.

The area given to corn has steadily increased during the 60 years under review, occupying at the close about one-third the total area given to all the grain and hay crops. The yield per acre has also increased from 29.2 bushels during the 'fifties to nearly 40 bushels for the last decade. In total bushels nearly five times as much corn was grown during the last decade as during the first.

In the oats crop there has been a still larger increase in area, in yield per acre and in total yield, and in wheat the acreage has been multiplied by three and the total bushels by four.

The livestock statistics show a smaller falling off in the total number than is found to have been the case in most of the counties of the State, although when compared with the land under cultivation the ratio has dropped from the equivalent of 166 cattle per 1,000 acres during the 'seventies to 127 per 1,000 during the last decade, the area under cultivation having increased while the number of livestock has decreased.

AUGLAIZE COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	17,187	20,041	25,444	28,100	31,192	31,246
White	17,123	19,979	25,375	28,054	31,167	31,209
Negro	64	61	69	46	24	36
Foreign born	3,585	3,181	3,001	2,614	1,839	1,265
Rural	.....	.....	.....	.....	21,918	20,165
Urban	.....	.....	.....	.....	9,274	11,081

FARMS: U. S. Census

	1880	1890	1900	1910
Approximate land area—Acres	.....	.....	.....	254,080
Land in farms—Acres	245,493	232,277	240,507	237,509
Improved land in farms—Acres	161,630	169,762	187,924	196,995
Woodland in farms—Acres	78,888	62,515	52,583	31,998
Other unimproved land in farm—Acres	4,975			8,516
Total number of farms—Number	2,627	2,580	2,810	2,736
Area of average farm—Acres	93.4	90.0	85.6	86.8
Improved land per farm—Acres	61.5	65.8	66.9	72.0
Value of all property per farm—Dollars	3,984	4,728	4,481	8,368
Value of land and buildings per farm—Dollars	3,499	4,155	3,889	7,288
Value of land and buildings per acre—Dollars	37.46	46.17	45.43	83.94

LIVESTOCK: 10-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-06
Horses—Number	4,359	6,341	7,534	7,797	8,676	7,029
Cattle—Number	11,225	13,585	14,826	16,067	13,956	15,129
Sheep—Number	11,228	25,229	18,953	16,611	12,580	7,372
Hogs—Number	18,148	23,835	26,951	23,428	22,148	22,087
Cattle equivalent—Total	18,521	24,832	26,950	27,868	26,105	25,105
Cattle equivalent—Per 1,000 acres	.....	.....	166	164	139	127

FARM CROPS: 10-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-00
Corn—Acres	13,220	19,133	31,366	36,508	39,443	47,070
Bushels	385,631	500,224	1,085,266	1,226,168	1,323,016	1,876,191
Bushels per acre	29.2	26.2	33.7	33.5	33.8	39.9
Oats—Acres	5,430	7,046	12,337	9,862	12,802	21,756
Bushels	71,192	168,396	318,711	324,936	371,923	720,633
Bushels per acre	13.1	23.9	25.8	32.9	29.0	33.1
Wheat—Acres	10,167	14,875	22,437	36,396	36,805	32,499
Bushels	103,746	162,914	320,564	489,338	573,927	467,691
Bushels per acre	10.4	10.9	14.3	13.4	15.6	14.4
Rye—Acres	965	747	317	437	629	615
Bushels	8,669	7,454	4,023	6,261	7,856	8,308
Bushels per acre	9.0	10.0	12.7	14.3	12.5	13.5
Meadows—Acres	7,068	7,558	8,480	11,635	14,913	13,529
Tons	8,288	8,410	8,925	12,716	16,679	15,851
Tons per acre	1.17	1.11	1.05	1.09	1.12	1.17
Clover—Acres	.....	2,300	4,821	7,284	7,170	10,746
Tons	.....	2,059	4,730	7,665	8,532	13,138
Tons per acre	.....	.90	.98	1.05	1.19	1.22
Pasture—Acres	.....	.....	16,493	16,757	21,878	42,954
Potatoes—Acres	.....	689	1,095	1,426	1,351	1,056
Bushels	.....	36,356	65,246	116,704	75,561	74,766
Bushels per acre	.....	52.7	59.6	81.8	55.9	70.8
Orchards—Acres	.....	2,014	2,701	2,545	2,400	1,908
Apples—Bushels	.....	69,976	107,147	62,092	43,611	35,668

BELMONT COUNTY

Location.—Belmont is one of the middle-eastern counties of the State. It is bounded on the north by Harrison and Jefferson; on the east by the Ohio River and West Virginia; on the south by Monroe and on the west by Noble and Guernsey. Area, 530 square miles. Organized in 1801.

Bellaire, Bridgeport and Martin's Ferry are on the Ohio River, opposite Wheeling, West Virginia.

Geology.—Belmont County lies over the coal measures and practically every farm is underlaid with valuable beds of coal, only a small part of which is as yet being mined. In the majority of cases, however, the coal has been sold.

Topography.—The western part of the county may be classed as rolling to hilly, while the eastern portion is very hilly and broken.

Soils.—Excepting a few small areas of alluvium in the river and creek valleys the soils are residual, modified by the wash down the hillsides which has to some extent commingled the detritus from the alternating layers of sandstone and limestone. The sand rocks predominate, and the soils of the county as a whole are classed chiefly with the DeKalb silt loam, with small areas of a heavier clay loam derived from the limestones. A noticeable feature of the Belmont County soils is their relative immunity from washing, an immunity due to the considerable amount of carbonate of lime in the soil which has encouraged the growth of pasture grasses. There is no better protection of the soil from washing than a bluegrass sod.

Agriculture.—The yield of the cereal crops has been maintained for 60 years at an average level of 37.5 bushels of corn, 23.4 bushels of oats and 12.1 bushels of wheat per acre, but there has been a reduction in area of each of these crops during the last 30 years, so that there has been a considerable falling off in total production. This reduction in area has been in part due to the growth of the towns and in part to an increase in the land given to the hay crops.

Taken in connection with the reduction in livestock these statistics indicate a shifting of base from a system of agriculture in which a large part of the produce of the farm is fed on the farm to one in which both grain and hay are sold off the farm.

The livestock has rapidly fallen off from the equivalent of 186 cattle to 1,000 acres of improved land for the 30 years, 1860 to 1889, to 111 cattle for 1,000 acres for 1900-1909, a loss equivalent to 75 cattle per 1,000 acres, or to 19,000 cattle for the county. The manure produced by this number of cattle would contain approximately the following constituents annually: Nitrogen, 1,900,000 pounds; phosphorus, 475,000 pounds; potassium, 1,500,000 pounds.

The fertilizers purchased during the last 10-year period have restored less than 10 percent of the nitrogen carried out of the county in the crops sold, less than 20 percent of the phosphorus and about 12 percent of the potassium.

The present average crop yields of Belmont County are too low to yield a satisfactory profit, and there is no reason to believe that even these low yields will be maintained under the present system of agriculture.

BELMONT COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	36,398	39,714	49,638	57,413	60,875	76,856
White	35,401	38,406	48,007	55,477	59,006	75,070
Negro	997	1,307	1,631	1,936	1,869	1,786
Foreign born	2,078	2,614	3,128	4,415	4,591	11,575
Rural					35,516	45,570
Urban					25,356	30,286

Population of cities or towns, 1910; Bellaire, 12,946; Martins Ferry, 9,133; Barnesville, 4,233; Bridgeport, 3,974; St. Clairesville, 1,393.

FARMS; U S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area—Acres				339,200
Land in farms—Acres	342,312	324,863	327,450	318,728
Improved land in farms—Acres	264,762	258,898	267,625	254,513
Woodland in farms—Acres	70,856	65,971	59,825	40,038
Other unimproved land in farm—Acres	6,697			24,177
Total number of farms—Number	3,252	3,580	3,893	3,780
Area of average farm—Dollars	105.3	90.7	85.3	84.3
Improved land per farm—Acres	81.4	72.3	69.7	67.3
Value of all property per farm—Dollars	5,168	4,410	3,377	5,106
Value of land and buildings per farm—Dollars	4,611	3,832	3,158	4,399
Value of land and buildings per acre—Dollars	43.79	42.25	34.82	52.18

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses—Number	10,845	10,985	10,758	9,701	9,807	5,655
Cattle—Number	21,225	20,387	21,505	22,087	20,020	15,634
Sheep—Number	64,659	44,317	143,457	148,641	93,399	63,385
Hogs—Number	30,607	23,761	22,811	17,612	12,956	7,314
Cattle equivalent—Total	41,236	48,180	48,890	48,413	40,462	28,359
Cattle equivalent—Per 1,000 acres			185	187	151	111

FARM CROPS: 10-year averages: Ohio statistics

	1850-50	1860-69	1870-79	1880-89	1890-91	1900-09
Corn—Acres	27,027	25,263	27,708	24,919	23,631	19,862
Bushels	951,517	912,925	1,129,729	997,615	864,478	945,803
Bushels per acre	34.3	36.1	40.7	40.0	36,5	37.5
Oats—Acres	17,336	16,483	14,548	10,035	8,591	8,971
Bushels	353,252	417,676	346,586	262,240	173,458	222,081
Bushels Per acre	20.4	25.3	23.8	26.1	20.2	24.8
Wheat—Acres	34,209	20,347	20,284	24,943	24,418	16,289
Bushels	411,257	209,523	234,419	322,345	323,493	207,824
Bushels per acre	12.2	10.2	11.5	12.9	13.2	12.7
Rye—Acres	1,396	1,178	570	782	425	185
Bushels	9,000	12,096	4,908	1,683	4,444	1,857
Bushels per acre	6.6	12.7	8.6	9.4	10.4	10,0
Meadows—Acres	17,949	22 041	25,681	32,999	35,318	38,792
Tons	22,630	25,862	25,104	36,447	35,710	39,257
Tons per acre	1.26	1.17	,98	1,11	1,02	1.01
Clover—Acrss		3,589	2,561	1,871	2,714	2,112
Tons		2,913	2,271	2,061	3,212	2,338
Tons per acre		.81	.89	1,10	1.18	1.11
Pasture—Acres			104,419	133,070	135,795	141,161
Potatoes—Acres		972	1,171	1,365	1,362	1,026
Bushels		87,461	103,455	129,553	99,240	99,106
Bushels per acre		90,0	883	94.9	72.9	96.7
Orchards—Acres		5,594	6,508	6,270	6,355	5,162
Apples—Bushels		218,424	226,674	301,579	97 748	90,459

BROWN COUNTY

Location.—Brown County is in the southwestern quarter of the State on the Ohio River. Bounded on the north by Clinton and Highland, on the east by Adams, on the south by the Ohio River and Kentucky, and on the west by Clermont. Area, 481 square miles. Organized in 1817.

Geology.—Brown County lies over the geological formations known as the "Cincinnati Group," a series of alternating limestones and calcareous shales, locally called "blue clay." Over all of the county except the southeastern part the surface has been modified by glacial action.

Topography.—The general topography of the northern half of Brown County is that of a flat plain, except where it has been cut by the valley of the East Fork of the Little Miami and of Whiteoak Creek. As the Ohio River is approached the country becomes first rolling and then hilly, the southeastern part being cut into steep hills.

Soils.—There are three principal soil types in the county, namely: (1) The loessal soil covering the northern plain, and which extends over eastern Clermont, western Highland, southern Clinton and southeastern Warren Counties; (2) an extension of the Cincinnati silt loam, covering the rolling land south and southeast of the plain, and (3) a residual limestone soil, named the Colbert silt loam, closely resembling the Cincinnati silt loam and covering the steeper hills in the southeastern part of the county.

Agriculture.—The statistics of Brown County present the picture of a declining agriculture. The population, which is exclusively rural—the two principal towns having less than 2,000 people each in 1910—has fallen off by 25 percent since 1880; the yield of corn has steadily diminished for 60 years; that of wheat has only reached a 10-year average of 10 bushels per acre during two of the six decades. The area in meadows has been increased, while the number of livestock per 1,000 acres has fallen from the equivalent of 117 cattle per 1,000 acres during the 'seventies to 74 during the last decade, thus indicating that the hay is being sold off the farm.

As compared with the 'sixties, the livestock of Brown County has diminished by the equivalent of 11,000 cattle. Meanwhile, the purchase of commercial fertilizers has increased to an average of 1,360 tons during the decade 1900 to 1909. An estimate of the fertilizing elements which might have been retained on the farms of the county by keeping up the number of livestock, and of the quantity purchased in commercial fertilizers during the last decade is shown below:

	Nitrogen Lbs.	Phosphorus Lbs.	Potassium Lbs.
55,000 tons manure	550,000	137,000	495,000
1,360 tons fertilizer	27,000	95,000	34,000

The soil and general agricultural conditions of Brown County are very similar to those of the neighboring counties and will be more fully considered in the survey of Clermont County's agriculture.

BROWN COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	29,958	30,802	32,911	29,899	28,237	24,832
White	28,842	28,735	30,565	27,963	26,562	23,544
Negro	1,116	2,067	2,316	1,935	1,675	1,288
Foreign born	2,583	2,171	1,732	1,213	823	470
Rural	.....	.....	.....	.....	28,237	24,832
Urban	.....	.....	.....	.....	.....	.....

Population, 1910: Ripley, 1,840; Georgetown, 1,580.

FARMS: U. S. Census

Farms: U. S. Census	1880	1880	1900	1910
Approximate land area....Acres..	.....	.....	.....	307,840
Land in farms....Acres..	305,872	294,251	309,036	303,447
Improved land in farms....Acres..	231,035	236,054	265,741	262,037
Woodland in farms....Acres..	64,509	} 58,197	43,295	{ 26,767
Other unimproved land in farms....Acres..	10,328	}		{ 14,643
Total number of farms....Number..	3,462	3,372	3,963	4,111
Area of average farm....Acres..	88.3	87.3	78.0	73.8
Improved land per farm....Acres..	66.7	70.0	67.1	63.7
Value of all property per farm....Dollars..	3,294	3,329	2,793	3,683
Value of land and buildings per farm....Dollars..	2,902	2,903	2,359	3,065
Value of land and buildings per acre....Dollars..	32.87	33.25	30.24	41.53

LIVESTOCK: 10-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses....Number..	8,147	9,381	8,520	7,859	7,646	5,658
Cattle....Number..	14,791	15,491	14,721	14,695	11,688	11,408
Sheep....Number..	20,341	24,093	14,447	15,311	10,582	7,586
Hogs....Number..	39,935	35,671	31,747	23,636	19,458	16,872
Cattle equivalent { Total	28,965	30,843	27,860	26,449	22,338	19,512
Cattle equivalent { Per 1,000 acres	.....	.....	117	112	84	74

FARM CROPS: 10-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn....Acres..	39,439	37,048	45,498	40,386	45,838	44,631
Bushels..	1,214,314	979,604	1,315,359	1,036,783	1,136,389	1,059,446
Bushels per acre..	30.8	28.0	28.9	25.6	24.8	23.8
Oats....Acres..	7,599	9,929	11,134	10,213	6,215	6,866
Bushels..	90,725	165,868	189,513	181,083	96,360	130,329
Bushels per acre..	11.9	16.7	17.0	17.7	15.5	19.0
Wheat....Acres..	29,040	25,877	23,849	23,665	30,331	18,367
Bushels..	315,529	226,950	218,773	215,077	290,404	183,069
Bushels per acre..	10.9	8.8	9.2	9.0	9.6	10.0
Rye....Acres..	489	952	1,557	1,211	1,100	2,632
Bushels..	3,802	7,715	12,426	7,235	5,867	17,884
Bushels per acre..	7.8	8.1	8.0	6.0	5.3	6.7
Meadows....Acres..	6,818	11,195	11,968	17,508	19,567	19,526
Tons..	6,460	9,216	9,180	14,112	15,565	15,713
Tons per acre..	.95	.82	.77	.81	.80	.80
Clover....Acres..	.....	3,883	5,341	6,278	4,211	2,900
Tons..	.....	758	668	1,254	1,382	1,904
Tons per acre..	.....	.20	.13	.20	.33	.66
Pasture....Acres..	.....	.....	55,565	87,394	107,003	123,552
Potatoes....Acres..	.....	614	1,224	1,727	1,033	484
Bushels..	.....	37,210	73,497	80,568	50,869	22,901
Bushels per acre..	.....	60.6	600	46.7	49.2	59.7
Orchards....Acres..	.....	3,548	4,135	3,987	3,636	2,079
Apples....Bushels..	.....	57,975	175,351	149,157	106,117	34,195

BUTLER COUNTY

Location.—Butler County is in the western row of counties and in the second tier north of the Ohio River. Bounded on the north by Preble and Montgomery; on the east by Warren; on the south by Hamilton and on the west by Indiana (Franklin and Union Counties). Area, 452 square miles. Organized in 1803 from Hamilton County.

Geology.—The surface rocks are the calcareous shales and limestones of the Cincinnati series, the Richmond formation occupying the northern half of the county and the Point Pleasant strata the southern half. The entire county is covered with the glacial drift, but the Great Miami River has cut a broad valley through the county, entering at the northeastern corner, and spreading out in the southern part in a broad plain through which the Ohio River at one time flowed.

Topography.—But for the scouring of the water courses the topography would be that of a nearly level plain. This topography prevails over the plateau land between the streams, the broad, flat valleys of which are separated from the plateau by steep hillsides, 200 to 300 feet high.

Soils.—The soils belong to the Miami series, the Miami silt loam and Miami clay loam occupying most of the higher land, with minor areas in the northern part of Bellefontaine gravelly loam, while the valley land is classed with the sandy loam and silt loam of the Fox series. The periodic floods which sweep down the valley have thrown up large deposits of gravel to be covered later with sand and silt. Seven-mile and Four-mile creeks, which flow into the Miami from the west, add considerable areas of bottom land.

Agriculture.—From its earliest history the growing of corn to be fed to hogs has been the leading industry of Butler County, although a large acreage of wheat has been grown and many cattle have been kept. Since 1880, however, the continuous growing of corn, which has been practiced on many fields, has begun to produce its universal effect in diminished yield. That the decrease in yield has not been greater than that shown is due in part to the maintenance of the ratio of livestock to land under cultivation for a longer period than has been done in many other counties; in part to a considerable increase in the area given to clover, indicating that crop rotation has been receiving more attention than formerly, and in part to the use of commercial fertilizers, which while chiefly used on wheat, have had their effect on the crops following the wheat.

The wheat crops averaged less than 13 bushels per acre for the 30 years, 1860-1889, but have risen to an average of 16 bushels for the next 20 years. The use of commercial fertilizers has not been sufficient to account for all of this increase, as the average purchase of fertilizers amounted to but 6 pounds per acre of wheat during the 'nineties, and to but 22½ pounds for the next decade—far from enough to make up for the manure which might have been produced by the equivalent of 7,000 cattle, which were permitted to drift out of the reckoning between 1880 and 1910, but the increasing growth of clover has helped the wheat as well as the corn.

The soil and agricultural conditions of Butler County are so similar to those of Montgomery and Warren that many of the results that have been obtained at the experiment farm at Germantown, Montgomery County, apply almost equally to the uplands of Butler and Warren. (See page 364.)

BUTLER COUNTY STATISTICS

POPULATION; U. S. Census

	1860	1870	1880	1890	1900	1910
Total	35,840	39,912	42,579	48,597	56,870	70,271
White	35,111	38,921	41,435	47,476	55,683	68,479
Negro	729	991	1,144	1,121	1,187	1,792
Foreign born	6,642	6,910	5,943	5,928	5,482	5,778
Rural					23,741	21,840
Urban					33,129	48,431

Population of cities or towns, 1910: Hamilton, 35,279; Middletown, 13,152; Oxford, 2,017

FARMS U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area—Acres				289,280
Land in farms—Acres	294,039	278,335	280,331	278,863
Improved land in farms—Acres	238,476	233,840	226,347	226,347
Woodland in farms—Acres	47,083	44,495	53,984	25,748
Other unimproved land in farms—Acres	8,480			26,283
Total number of farms—Number	2,641	2,604	2,724	2,606
Area of average farm—Acres	111.3	106.9	102.9	107
Improved land per farm—Acres	90.3	89.8	83.4	87
Value of all property per farm—Dollars	8,452	6,401	5,730	9,071
Value of land and buildings per farm—Dollars	7,812	5,725	5,120	8,064
Value of land and buildings per acre—Dollars	70.19	53.55	49.77	75.36

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Horses—Number	10,774	11,472	10,872	10,874	10,829	7,954
Cattle—Number	17,584	16,018	16,639	17,832	14,068	14,325
Sheep—Number	8,486	9,853	7,578	10,092	8,762	6,901
Hogs—Number	52,006	39,349	42,654	26,209	20,958	20,404
Cattle equivalent—Total	34,407	32,410	30,534	32,336	27,869	25,009
Cattle equivalent—Per 1,000 acres			136	138	123	110

FARM CROPS: 10-year average: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Corn—Acres	57,742	54,109	63,845	58,711	50,842	54,210
Bushels	2,377,936	2,119,354	2,703,304	2,261,302	1,782,802	2,048,158
Bushels per acre	41.1	39.2	42.3	38.5	35.1	37.3
Oats—Acres	8,662	9,088	8,833	10,436	9,895	10,093
Bushels	115,066	189,091	197,472	279,430	253,005	281,798
Bushels per acre	13.3	20.8	22.4	26.7	25.6	27.9
Wheat—Acres	33,483	40,446	34,269	47,128	51,220	50,337
Bushels	502,929	491,823	442,108	609,815	842,963	785,331
Bushels per acre	15.9	12.1	12.9	12.9	16.5	15.6
Rye—Acres	232	309	416	150	202	449
Bushels	2,280	2,904	4,348	1,273	2,020	3,919
Bushels per acre	9.9	9.4	10.2	8.5	10.0	8.7
Meadows—Acres	6,704	7,674	9,274	11,365	16,476	15,961
Tons	7,337	8,299	9,304	12,874	17,944	15,906
Tons per acre	1.09	1.09	1.00	1.13	1.09	1.06
Clover—Acres		7,523	10,502	14,310	14,902	16,806
Tons		1,170	2,276	6,005	9,339	11,552
Tons per acre		.16	.22	.42	.63	69
Pasture—Acres			26,405	26,007	24,412	44,104
Potatoes—Acres		1,270	1,216	1,382	1,494	1,123
Bushels		84,035	82,861	104,941	101,742	94,815
Bushels per acre		66.2	68.1	75.9	68.1	82.6
Orchards—Acres		4,432	4,304	2,673	1,999	702
Apples—Bushels		30,948	89,825	57,320	26,794	6,047

CARROLL COUNTY

Location.—Carroll County is in eastern Ohio. It is bounded on the north by Stark and Columbiana; on the east by Columbiana and Jefferson; on the south by Harrison and on the west by Tuscarawas and Stark. Area, 387 square miles. Organized in 1833.

Geology.—The county lies south of the terminal moraine and the surface rocks are principally the argillaceous shales and thin sandstones of the Barren and Lower Coal Measures, which have weathered into the Dekalb soil which occupy a large area in southeastern Ohio.

Topography.—The streams crossing the county have excavated narrow valleys to the depth in many places of 300 feet or more, which are bordered by steep hillsides. Between these valleys the surface is rolling.

Soil.—The predominant soil type in Carroll County is the Dekalb silt loam, rather light soil, easily worked and responsive to treatment, but for that reason more easily depleted of its fertility and therefore requiring the more careful management if its productiveness is to be maintained. The geological history of the soil and the reduction in the area given to clover indicate a deficiency of lime.

Agriculture.—Nearly equal areas of corn, oats and wheat are grown annually, while the area reported as in meadows and clover is nearly equal to that in the three grain crops combined. The yield of corn has averaged about 34 bushels to the acre for 40 years; that of oats, 27½ bushels, and that of wheat has gradually risen from less than 10 bushels for the 20 years, 1850-69, to 13½ bushels for the last 20 years, an increase probably due to larger use of commercial fertilizers during the later period.

For many years sheep husbandry was the leading industry in Carroll County, but during recent years the number of sheep kept in the county has fallen off from an average of 132,252 for the 10 years, 1880-89, to 51,742 for the 10 years, 1900-1909, while the total livestock equivalent of the county has diminished from the equivalent of 171 cattle per 1,000 acres in farms during the 'eighties to 109 per 1,000 acres during the last decade.

The hills of Carroll County offer fine opportunities for orcharding, and apple production reached large proportions during the middle third of the 60-year period, but with increasing age of the orchards, neglect of soil fertility, and greater prevalence of insect pests and fungous diseases of fruits, the yield of apples has rapidly diminished during recent years. It has been abundantly demonstrated, however, that apples may be grown today on the hills of Ohio as successfully as ever before.

CARROLL COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	15,738	14,491	16,416	17,566	16,811	15,761
White	15,697	14,433	16,355	17,492	16,779	15,736
Negro	41	58	61	74	32	25
Foreign born	978	785	704	1,182	717	803
Rural					16,811	15,761
Urban						

Population, 1910: Carrollton, 1,730

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area....Acres..				247,680
Land in farms....Acres..	248,570	241,648	243,060	239,888
Improved land in farms....Acres..	194,373	198,216	199,557	195,181
Woodland in farms....Acres..	53,285	43,432	43,503	29,195
Other unimproved land in farms....Acres..	912			15,512
Total number of farms....Number	2,094	2,229	2,301	2,170
Area of average farm....Acres..	118.7	108.4	105.6	110.5
Improved land per arm....Acres..	93.3	89.0	86.7	89.9
Value of al property per farm....Dollars..	6,246	4,940	3,744	5,070
Value of land and buildings per farm....Dollars .	5,556	4,251	3,080	4,081
Value of land and buildings per acre....Dollars..	46.89	39.22	28.41	36.93

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses....Number..	5,852	5,141	5,078	5,542	5,825	3,933
Cattle....Number..	13,189	12,397	13,169	14,100	13,103	11,537
Sheep....Number..	76,807	136,930	122,190	132,252	82,935	51,342
Hogs....Number..	13,353	9,842	8,808	9,574	9,428	7,062
Cattle equivalent Total	28,057	32,215	31,847	33,825	28,164	21,320
Cattle equivalent Per 1,000 acres.			167	171	141	109

FARM CROPS: 10-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn....Acres..	10,425	10,942	15,161	13,606	13,989	12,666
Bushels.	256,590	326,685	510,657	463,889	459,465	458,424
Bushels per acre..	24.6	30.7	34.2	34.0	32.8	36.2
Oats....Acres..	13,686	12,186	14,756	13,371	13,841	12,775
Bushels..	243,440	321,824	394,840	383,514	373,864	353,800
Bushels per acre..	17.8	26.4	26.7	28.7	27.0	27.7
Wheat....Acres..	24,621	13,120	14,679	16,208	15,762	13,066
Bushels..	243,413	124,172	167,232	204,268	215,487	173,897
Bushels per acre..	9.9	9.4	11.4	12.6	13.7	13.4
Rye....Acres..	5,112	2,855	716	344	255	130
Bushels..	23,767	26,319	6,713	3,081	2,272	1,424
Bushels per acre..	4.6	9.2	9.4	9.0	8.9	11.0
Meadows....Acres..	16,448	17,682	21,748	27,289	29,521	33,056
Tons..	18,190	20,247	21,790	29,175	30,046	31,933
Tons per acre..	1.11	1.15	1.00	1.07	1.02	.97
Clover....Acres..		3,422	3,788	3,875	2,849	2,302
Tons..		3,654	3,716	4,200	3,158	2,437
Tons per acre..		1.07	.98	1.08	1.11	1.06
Pasture....Acres .			79,262	104,409	108,103	88,802
Potatoes....Acres..		447	489	585	759	699
Bushels..		45,449	46,830	54,003	67,192	64,339
Bushels per acre..		101.7	95.8	92.3	885	920
Orchards....Acres..		3,775	4,604	4,720	4,850	3,927
Apples....Bushels..		88,513	195,362	204,859	157,773	105,246

CHAMPAIGN COUNTY

Location.—Champaign County is in the middle of the western half of the State. Bounded on the north by Logan, on the east by Union and Madison, on the south by Clark and on the west by Shelby and Miami Counties. Area, 421 square miles. Organized in 1805.

Geology.—The floor of Champaign County is limestone belonging to the Waterlime, Clinton and Niagara series, but over this has been spread a mantle of glacial drift, consisting in many places of extensive beds of gravel, deposited as moraines by the retreating glaciers.

Topography.—The higher lands of the extreme eastern and western ends of the county and the floors of the broad valley of Mad River, which crosses the county from north to south, and those of King's Creek and Buck Creek, are level to flat, while the morainic deposits between the streams have been left as rolling hills.

Soils.—The drift where not morainic has weathered into the silt and clay loams of the Miami series; on the gravelly hills the better drainage has produced a reddish- or chocolate-colored soil, containing more sand and gravel than the Miami soils, and in the valleys the wash from the higher lands has produced an alluvial soil of superior quality when properly drained.

Agriculture.—The statistics of cereal production in Champaign County present a picture of a steadily increasing yield per acre.

Corn has been the leading crop in area, with wheat a close second until the last decade, when there was a considerable shifting from wheat to corn and oats.

Clover holds a relatively high position, occupying more than half the land given to the hay crops during the latter half of the 60-year period. The plentiful supply of lime carbonate in the soil, together with the natural drainage, both furnished by the limestone gravel, have been favorable to the growth of clover and the clover has furnished nitrogen to the cereal crops.

The system of agriculture, however, has been such as to reduce the soil supply of phosphorus, and it is highly probable that a larger use of fertilizers carrying this element would meet a response similar to that which is being shown on the experiment farms in Miami and Montgomery Counties.

The official statistics show an annual purchase of 2,248,000 pounds of fertilizers during the 10 years, 1900-09, which would give less than 20 pounds per acre annually for the 113,000 acres in the cereal crops during that period.

CHAMPAIGN COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	22,698	24,188	27,817	26,980	26,642	26,351
White	21,910	23,078	26,145	25,467	25,176	24,834
Negro	788	1,110	1,661	1,511	1,460	1,410
Foreign born	1,413	1,464	1,381	1,102	776	521
Rural	.....	.....	.....	.....	19,834	18,612
Urban	.....	.....	.....	.....	6,808	7,739

Population of cities or towns, 1910: Urbana, 7,739; St. Paris, 1,261

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area—Acres	.....	.....	.....	269,440
Land in farms—Acres	254,044	251,898	269,021	256,240
Improved land in farms—Acres	194,291	210,668	218,543	220,814
Woodland in farms—Acres	55,587	41,230	50,478	26,874
Other unimproved land in farms—Acres	4,166			8,552
Total number of farms—Number	2,254	2,355	2,540	2,462
Area of average farm—Acres	112.7	107.0	105.9	104.1
Improved land per farm—Acres	86.2	89.5	78.3	89.7
Value of all property per farm—Acres	7,048	6,116	5,570	9,794
Value of land and buildings per farm—Dollars	6,268	5,353	4,824	8,489
Value of land and buildings per acre—Dollars	55.63	47.5 0	45.55	81.55

LIVESTOCK: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses—Number	7,829	9,344	9,641	10,526	10,924	8,963
Cattle—Number	19,345	17,553	17,572	18,207	15,651	16,669
Sheep—Number	48,344	56,289	39,311	35,794	28,181	20,021
Hogs—Number	27,123	26,753	33,258	29,895	25,208	30,988
Cattle equivalent—Total	34,821	35,201	34,470	35,302	31,914	30,803
Cattle equivalent—Per 1,000 acres	.....	.....	177	168	146	139

FARM CROPS: 10-year averages

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn—Acres	31,929	35,315	45,136	45,977	51,524	60,391
Corn—Bushels	142,762	1,268,639	1,737,691	1,757,975	1,982,331	2,513,072
Corn—Bushels per acre	35.8	35.9	39.5	38.2	38.4	41.6
Oats—Acres	6,356	7,400	6,945	4,751	8,242	23,233
Oats—Bushels	114,444	215,766	191,193	148,225	237,885	800,181
Oats—Bushels per acre	18.0	29.2	27.5	31.2	28.8	34.4
Wheat—Acres	30,835	33,117	32,987	47,235	45,086	28,576
Wheat—Bushels	408,115	460,422	471,616	704,774	681,185	416,060
Wheat—Bushels per acre	13.2	13.9	14.3	14.9	15.1	14.5
Rye—Acres	838	513	162	125	3,982	1,281
Rye—Bushels	7,635	6,311	2,401	1,790	3,872	13,050
Rye—Bushels per acre	9.1	12.3	14.8	14.3	9.7	10.2
Meadows—Acres	13,289	12,851	9,587	10,504	11,799	12,304
Meadows—Tons	16,258	15,786	10,071	13,556	14,620	14,580
Meadows—Tons per acre	1.22	1.23	1.05	1.29	1.24	1.18
Clover—Acres	.....	4,342	5,293	10,946	14,801	12,520
Clover—Tons	.....	2,535	3,741	8,444	13,728	12,884
Clover—Tons per acre	.....	.65	.71	.77	.93	1.03
Pasture—Acres	.....	.....	34,887	34,213	36,324	51,7 60
Potatoes—Acres	.....	493	652	1,025	945	424
Potatoes—Bushels	.....	43,574	54,224	87,393	64,875	37,844
Potatoes—Bushels per acre	.....	88.4	83.2	85.3	68.7	89.3
Orchards—Acres	.....	3,324	2,981	2,601	2,440	1,462
Apples—Bushels	.....	115,671	114,345	84,162	42,185	31,095

CLARK COUNTY

Location.—Clark County is in the southwestern quarter of the State. Bounded on the north by Champaign, on the east by Madison, on the south by Greene, and on the west by Miami and Montgomery. Area, 407 square miles. Organized in 1817.

Geology.—The floor of the county is limestone, chiefly of the Clinton and Niagara formations, but it has been everywhere covered with a sheet of glacial drift, which also has been chiefly derived from the limestones, which extend to the northern boundary of the State. In the broad valleys of Mad River, which enters the county near the middle of the northern boundary and flows out at the southwest corner; of Buck Creek, coming in from the northeast and joining Mad River at Springfield, and of the Little Miami, which finds its headwaters in the southeastern quarter of the county the drift has been worked over and replaced by alluvium. In Clark as in Champaign there are extensive morainic deposits of gravel.

Topography.—The surface of the county is gently rolling, with extensive areas of flat land in the creek valleys.

Soils.—The predominant soils of the county are the silty and gravelly clay loams of the Miami and Bellfontaine series, with considerable areas of alluvium, including both the black first bottoms of the Wabash series and the lighter and more sandy terrace or second bottom lands of the Fox series. The gravelly Bellefontaine soils covering the moraines are generally naturally drained with the underlying gravel, as are also some of the terrace and bottom lands, but the intermediate Miami soils are generally in need of more or less artificial drainage. The limestone derivation of all the land, however, has assured a soil of permanent fertility where properly handled.

Agriculture.—The statistics of crop production show a steady increase in the production of corn, excepting a slight drop during the 'eighties, culminating in a larger acreage and a larger yield per acre during the last decade than for any similar period of the 60 years.

The total production of wheat increased steadily until the last decade of the century, when an average yield of 16.1 bushels per acre was attained, but during the next decade there was a marked falling off both in yield and in area, much of the wheat land having been transferred to oats, which has always been relatively a minor crop. During this period wheat in Ohio generally suffered from a severe attack of Hessian fly, which not only reduced the yield per acre but caused much land that had been sown in wheat to be sown in oats the following spring. Later statistics show a recovery of the yield per acre in Clark County, and a gradual extension in area.

The livestock industry in Clark County shows a similar decline to that observed all over the State, and while there has been a considerable use of commercial fertilizers the quantity purchased has been far from sufficient to offset the loss of fertilizing constituents in the feeds which have been shipped out of the county, instead of being fed on the land, the statistics indicating that the annual purchase of fertilizing materials has averaged less than 17 pounds per acre of land in crops.

CLARK COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	25,300	32,070	41,948	52,297	58,939	66,435
White	24,808	30,014	38,366	47,632	53,693	60,839
Negro	492	2,056	3,580	4,640	5,243	5,583
Foreign born	2,871	3,556	4,269	4,619	3,909	3,596
Rural					38,253	46,921
Urban					20,686	19,514

Population, 1910: Springfield, 46,921; South Charleston, 1,181.

FARMS: U. S. Census

FARMS: U. S. Census	1880	1890	1900	1910
Approximate land area—Acres				260,480
Land in farms—Acres	250,160	229,174	240,903	241,631
Improved land in farms—Acres	201,641	194,359	198,857	208,353
Woodland in farms—Acres	41,414	34,815	42,046	19,227
Other unimproved land in farms—Acres	7,105			14,051
Total number of farms—Number	2,050	2,141	2,330	2,532
Area of average farm—Acres	122.0	107.0	103.4	95.4
Improved land per farm—Acres	98.3	90.8	85.3	86.2
Value of all property per farm—Dollars	8,328	7,797	7,266	9,954
Value of land and buildings per farm—Dollars	7,478	6,925	6,440	8,736
Value of land and buildings per acre—Dollars	61.30	64.72	62.28	90.53

LIVESTOCK: 10-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses—Number	7,294	8,972	8,998	10,195	10 956	7,667
Cattle—Number	18,364	16,580	16,513	17 750	15,588	15.582
Sheep—Number	57,115	67,241	53,086	54,224	38,450	19,697
Hogs—Number	27,051	27,064	29,237	23,596	21,712	21,496
Cattle equivalent—Total	34,075	34,982	32,743	35,727	32,560	27,368
Cattle equivalent—Per 1,000 acres			167	184	164	131

FARM CROPS: 10-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn—Acres	27,081	31,840	42,407	39,734	46,868	49,471
Corn—Bushels	962,156	1,132,725	1,630,907	1,559,479	1,800,289	2,051,776
Corn—Bushels per acre	35.5	35.4	38.4	39.0	38.4	41.5
Oats—Acres	6,235	6,697	6,396	4,092	5,916	11,939
Oats—Bushels	106,384	190,942	177,155	121,675	166.714	390,331
Oats—Bushels per acre	17.1	28.5	27.7	29.7	28.2	32.7
Wheat—Acres	26,128	28,556	29,861	38.333	37,072	29,116
Wheat—Bushels	385,015	388,009	439,674	541,408	598,120	383,257
Wheat—Bushels per acre	14.7	13.5	14.7	14.1	16.1	13.2
Rye—Acres	1,584	1,275	575	315	1,067	1,063
Rye—Bushels	13,697	17,247	7,747	4,225	10,656	12,930
Rye—Bushels per acre	8.9	13.4	13.5	13.4	10.0	12.2
Meadows—Acres	12,762	12 664	11,614	13,781	15,315	16,593
Meadows—Tons	14,971	15,542	14,297	16,343	19,391	21,250
Meadows—Tons per acre	1.17	1.23	1.23	1.19	1.27	1.28
Clover—Acres		3,796	6,393	9,677	10,846	7,526
Clover—Tons		2,558	4,453	8,857	11,887	8,993
Clover—Tons per acre		.67	.70	.92	1.10	1.19
Pasture—Acres			43,655	40,300	33,654	36,117
Potatoes—Acres		762	929	1,218	1,125	893
Potatoes—Bushels		53,707	71,922	114,326	75,559	74,215
Potatoes—Bushels per acre		70.5	77.4	93.9	67.2	83.1
Orchards—Acres		2,854	2,990	2,227	1,973	1,525
Apples—Bushels		61,625	95,557	74,597	39,532	23,459

CLERMONT COUNTY

Location.—Clermont County is in the southwestern quarter of the State, on the Ohio River and in the second tier of counties from the Indiana line. Bounded on the north by Warren, on the east by Brown, on the south by the Ohio River and Campbell and Bracken Counties, Kentucky, and on the west by Hamilton. Area, 465 square miles. Organized in 1800.

Geology.—The surface rocks in Clermont County are the limestones and calcareous shales of the Cincinnati series, but they are everywhere covered with glacial drift, excepting small areas along the steeper hillsides from which the drift has been removed by washing.

Topography.—The northeastern and eastern part of the county is part of the high plateau which extends over northern Brown, western Highland, southwestern Clinton and southeastern Warren Counties, occupying a territory approximately 500 square miles in area. To the south and west deep channels have been cut through this plateau by the Ohio and Miami Rivers, thus producing a region of deep valleys with steep, rugged sides.

Soils.—The surface soil of the plateau land differs from that found in any other section of the State and closely resembles the type of soils known as "loess." Where the surface is sufficiently rolling to permit the water to run off rather rapidly after rains, the soil is a yellow brown color and has been called the Cincinnati silt loam; but where the surface is level and water remains after rains until most of it is removed by evaporation, the soil has become a very light gray to white in color and has been called the Clermont silt loam.

Agriculture.—Agriculturally, Clermont County is one of the oldest counties in the State, the total area in crops having reached its maximum by 1850. The statistics of crop production show that corn has been the leading crop of the county, the area annually planted in this crop occupying more than one-third of the total area given to all crops. The yield of corn, however, has steadily declined during the 60 years under review, the average yield per acre falling from 30.7 bushels for the first 30 years to 25.6 for the last 30, and the total annual yield diminishing by more than 200,000 bushels. Oats has averaged less than 19 bushels and wheat but little over 10 bushels per acre for the entire statistical period.

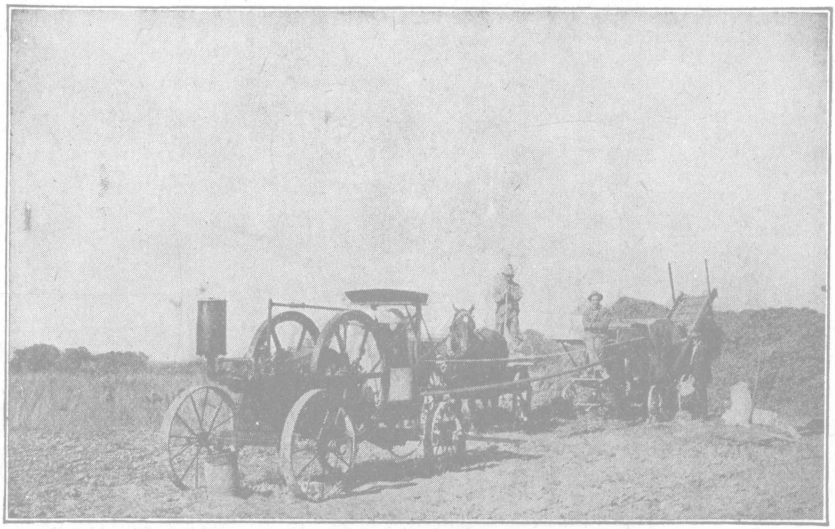
The statistics of livestock show that there has been a decrease in the number of farm animals from the equivalent of 29,000 cattle during the 'sixties to 17,000 during the last decade, or a loss equivalent to 12,000 cattle. Meanwhile, however, there has been an increase of 13,600 acres in the area given to the hay crops, thus showing that hay in increasing quantities has been sold off the farm.

Under this system of management there has been a steady decline in the produce of the average Clermont County farm, one reason for which may be found in the following statement, which shows approximately the quantities of nitrogen, phosphorus and potassium that might have been restored to the land each year more than has actually been done, had the livestock of the county been maintained at the number kept during the 20 years, 1850-1869, together with the estimated quantities of fertilizing elements contained in the 875 tons of commercial fertilizers purchased annually during the last 10 years.

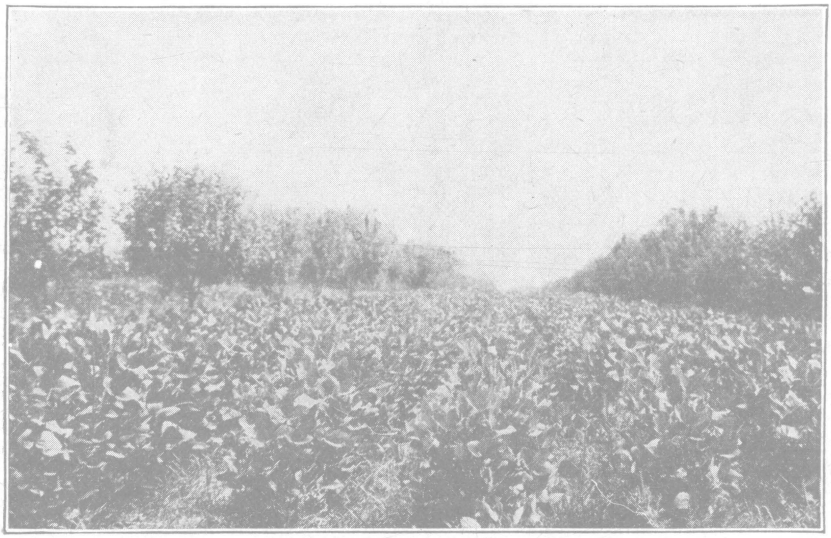
	Nitrogen	Phosphorus	Potassium
	Lbs.	Lbs.	Lbs.
68,000 tons manure	680,000	170,000	612,000
873 tons fertilizer	14,000	63,000	14,000

In 1911 a county experiment farm was established near Owensville, on a typical Clermont silt loam soil. The farm selected for this purpose had never been drained and its principal crop for half a century had been timothy hay, the major portion of which had been hauled to Cincinnati. After draining a part of the farm a 4-year rotation of corn, soybeans, wheat and clover was established, four tracts of land being used in order to grow each crop every year. Part of this land has been left continuously without any manure or fertilizer, while on another part 8 tons per acre of stable manure, reinforced with 40 pounds of acid phosphate per ton of manure, has been plowed under for corn and followed by 2 tons of powdered limestone applied to the surface, while the wheat has received a chemical fertilizer made up per acre of 200 pounds of 16 percent acid phosphate and 50 pounds each of nitrate of soda and muriate of potash. The outcome of this test has been that drainage alone has not increased the yield of crops, but fertilizers, lime and manure have been so much more effective on the drained than on the undrained land that, when all these ameliorants have been employed, the increase produced has been enough greater on the drained than on the undrained land to pay off the cost of the drainage within 6 years, at the prices of produce and fertilizing materials prevailing before the European war, or within half that time at war prices.

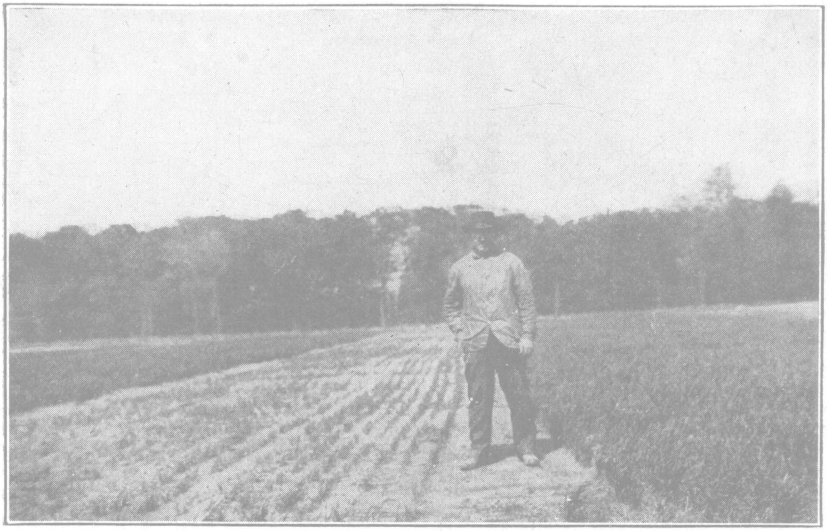
The substantial old buildings that are found on this Clermont silt loam show that the soil at one time yielded a fair return for treatment. The outcome of the work on the Experiment Farm indicates that it is both possible and practicable to restore it to productiveness.



Threshing soybeans, Clermont County Experiment Farm



Soybeans in orchard, Clermont County Experiment Farm



Effect of ertilizers on wheat, Clermont County Experiment Farm

CLERMONT COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	33,034	34,264	36,713	33,553	31,610	29,551
White	32,201	32,638	34,895	32,043	30,427	28,685
Negro	833	1,629	1,817	1,510	1,183	865
Foreign born	2,564	2,287	2,085	1,676	1,330	1,052
Rural					31,610	29,551
Urban						

Population, 1910: Batavia, 1,034; New Richmond, 1,733; Bethel, 1,201; Loveland, 1,421.

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area ..Acres.				297,600
Land in farms ..Acres..	281,885	269,000	274,880	274,210
Improved land in farms ..Acres..	229,533	227,606	233,432	228,064
Woodland in farms ..Acres..	44,229	41,419	41,448	24,695
Other unimproved land in farms ..Acres..	8,123			21,451
Total number of farms ..Dollars..	3,464	3,666	4,113	3,876
Area of average farm ..Acres..	81.4	73.4	66.8	70.7
Improved land per farm ..Acres..	66.3	62.1	56.5	58.8
Value of all property per farm ..Dollars..	3,747	3,042	2,355	3,814
Value of land and buildings per farm ..Dollars..	3,367	2,679	2,003	3,260
Value of land and buildings per acre .. Dollars	41.36	36.50	30.00	46.11

LIVESTOCK: 10-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses ..Number..	8,199	9,881	8,766	8,226	7,612	5,724
Cattle ..Number..	14,854	14,006	12,315	13,146	10,301	9,747
Sheep ..Number..	14,259	19,316	9,818	9,507	6,684	4,125
Hogs ..Number..	43,856	33,608	28,448	20,460	14,730	11,540
Cattle equivalent Total	28,864	29,179	24,907	24,369	20,054	17,037
Cattle equivalent Per 1,000 acres			109	107	86	75

FARM CROPS: 10-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn ..Acres..	35,598	35,563	40,823	35,772	35,377	36,781
Bushels..	1,184,476	1,035,232	1,223,709	951,727	903,854	912,721
Bushels per acre..	33.3	28.8	30.0	26.6	25.5	24.8
Oats ..Acres..		13,563	13,344	13,369	8,057	9,836
Bushels..		267,413	251,333	250,202	133,739	197,921
Bushels per acre..		19.7	18.8	18.7	16.9	20.0
Wheat ..Acres.	22,607	21,488	16,048	18,630	21,751	12,874
Bushels..	265,744	190,233	163,196	165,917	214,738	142,559
Bushels per acre..	11.8	8.8	10.2	8.9	9.9	11.1
Rye ..Acres..		1,086	1,131	941	1,551	2,339
Bushels..		8,612	9,280	5,877	9,923	18,378
Bushels per acre..		7.9	8.2	6.2	6.4	7.9
Meadows ..Acres..	12,361	19,010	16,966	22,573	24,874	24,662
Tons..	11,535	18,048	14,379	18,915	20,391	18,770
Tons per acre..	.93	.95	.85	.84	.82	.76
Clover ..Acres..		1,845	3,964	6,064	4,205	3,171
Tons		642	1,060	1,839	2,098	2,736
Bushels per acre..		.35	.27	.30	.50	.86
Pasture ..Acres..			37,268	61,734	65,678	92,565
Potatoes ..Acres..		4,108	5,634	3,758	1,819	1,130
Bushels..		187,822	268,234	163,744	82,601	66,602
Bushels per acre..		45.7	47.6	43.6	45.4	58.9
Orchards ..Acres.		7,723	9,681	7,763	7,388	5,528
Apples ..Bushels..		75,272	230,209	205,063	114,085	37,193

CLINTON COUNTY

Location.—Clinton County is in the southwestern quarter of the State. Bounded on the north by Greene and Fayette, on the east by Fayette and Highland, on the south by Highland and Brown, and on the west by Warren. Area, 411 square miles. Organized in 1810.

Geology.—The floor of the county is limestone, the eastern half belonging to the Clinton and Niagara series, the western half to the Richmond. Everywhere this floor is covered with a sheet of glacial drift, usually so thick as to leave very few exposures of the rock.

Topography.—The surface of the county is level to rolling, there being practically no land in the county that is too rough for tillage.

Soils.—A broad belt of Miami clay loam and silt loam with small areas of the darker Clyde clay extends across the county from northwest to southeast. The northeastern part of the county is largely covered with the level, black land of the Clyde clay, and the southwestern part with the level Clermont silt loam.

Agriculture.—Corn is the principal crop of the county, occupying more land during the first half of the 60 years under review than all the small grains and hay crops combined. During the last 30 years there has been an increase in the area given to the wheat and hay crops, but corn still claims 47 percent of the total area reported as in the grain and hay crops during the last decade. This means of course either that systematic rotation is being neglected by many farmers in the county, or that two or more crops of corn are taken before the land is sown to wheat or oats. The fact that the area in these crops is about twice as great as that in the hay crops and the very small area reported as in clover is a further indication of neglect of crop rotation.

The increased area given to wheat during the last half of the 60-year period has been coincident with an increase in the use of commercial fertilizers, the annual expenditure for such fertilizers having averaged $2,585, $9,919 and $33,732, respectively, during the last three decades. Meanwhile the livestock of the county has diminished from the equivalent of 34,369 cattle during the 'eighties to that of 26,544 cattle during the last decade, a reduction equivalent to nearly 8,000 cattle.

The total amount of phosphorus that might have been recovered in the manure of 8,000 cattle would have been greater in quantity but less effective in form than that purchased in fertilizers, and under prevailing systems of manure preservation much of it would have been lost, and hence the crops have profited by the change, in so far as yield is concerned, there having been a steady increase in the yield per acre during the 30 years. If this increase is to be maintained, however, it is important that more attention be given to securing nitrogen through the growth of clover.

CLINTON COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	21,461	21,914	24,756	24,240	24,202	23,680
White	20,638	20,769	23,293	22,940	23,001	22,740
Negro	823	1,145	1,463	1,296	1,199	939
Foreign born	791	682	680	515	412	245
Rural	.....	.....	.....	.....	20,559	19,189
Urban	.....	.....	.....	.....	3,613	4,491

Population of cities or towns, 1910: Wilmington, 4,491: Blanchester, 1,813: Sabina, 1,514

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area—Acres	.....	.....	.....	263,040
Land in farms—Acres	264,191	249,583	257,164	260,404
Improved land in farms—Acres	211,930	201,396	225,576	231,318
Woodland in farms—Acres	50,851	48,277	31,588	24,019
Other unimproved land in farms—Acres	1,410			5,067
Total number of farms—Number	2,337	2,522	2,531	2,586
Area of average farm—Acres	113.5	99.0	101.6	100.7
Improved land per farm—Acres	90.7	79.8	89.1	89.4
Value of all property per farm—Dollars	5,607	5,402	5,470	9,430
Value of land and buildings per farm—Dollars	4,977	4,739	4,750	8,268
Value of land and buildings per acre—Dollars	42.86	47.87	46.75	82.11

LIVESTOCK: 10-year average numbers: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Horses—Number	7,588	9,680	9,573	9,554	9,795	8,002
Cattle—Number	19,481	16,217	16,296	17,091	12,847	13,252
Sheep—Number	55,364	46,507	29,903	35,952	26,397	16,295
Hogs—Number	42,615	46,590	51,389	41,284	30,802	36,607
Cattle equivalent—Total	36,867	35,207	33,998	34,369	28,362	26,544
Cattle equivalent—Per 1,000 acres	.....	.....	169	171	126	115

FARM CROPS: 10-year averages: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Corn—Acres	38,769	45,951	61,688	54,335	54,385	60,691
Corn—Bushels	1,410,974	1,689,629	2,380,416	1,979,366	2,097,907	2,466,273
Corn—Bushels per acre	36.4	36.2	38.7	36.4	38.5	40.6
Oats—Acres	4,972	5,756	5,355	5,044	4,126	6,951
Oats—Bushels	65,257	134,345	117,215	136,108	94,051	197,031
Oats—Bushels per acre	13.1	23.3	21.9	27.0	22.8	28.3
Wheat—Acres	20,119	23,461	21,954	34,174	37,194	34,907
Wheat—Bushes	257,504	240,726	254,602	463,749	529,194	512,161
Wheat—Bushels per acre	12.8	10.3	11.1	12.1	14.2	14.7
Rye—Acres	164	353	420	156	354	980
Rye—Bushels	1,305	3,558	4,610	1,223	3,170	10,433
Rye—Bushels per acre	8.0	10.1	10.9	7.9	9.0	10.6
Meadows—Acres	9,380	11,010	10,592	12,400	16,361	16,781
Meadows—Tons	10,410	12,005	10,797	15,710	18,286	18,468
Meadows—Tons per acre	1.11	1.09	1.02	1.17	1.12	1.10
Clover—Acres	.....	1,281	2,001	3,932	7,214	8,519
Clover—Tons	.....	545	1,055	2,497	5,700	6,292
Clover—Tons per acre	.....	.43	.53	.64	.79	.74
Pasture—Acres	.....	.....	45,692	58,878	56,735	74,491
Potatoes—Acres	.....	598	1,076	969	769	346
Potatoes—Bushels	.....	37,160	69,126	56,266	47,050	24,209
Potatoes—Bushels per acre	.....	62.1	642	58.1	61.2	70.1
Orchards—Acres	.....	3,182	3,412	2,482	2,560	1,500
Orchards—Apples—Bushels	.....	43,542	97,128	77,236	69,151	18,930

COLUMBIANA COUNTY

Location.—Columbiana County is in the eastern tier of counties, bounded on the north by Mahoning, on the east by Lawrence and Beaver Counties, Pennsylvania, the Ohio River entering the State at the southeastern corner of the county; on the south by Jefferson and Carroll, and on the west by Carroll and Stark. Area, 534 square miles. Organized in 1803.

Geology.—The surface rocks in the northern third of the county are the conglomerate and lower productive coal measures, and in the southern part, the lower barren coal measures, chiefly shales and sandstones. The northern half of the county is covered with glacial drift.

Topography.—The northwestern part of the county is gently to heavily rolling, but as the river is approached the valleys become deeper and the hillsides steeper, the alternation of hill and valley being due to the carving action of the streams flowing from the ancient glaciers.

Soils.—The soils of the Volusia and Trumbull series which cover the counties to the north extend southward over the northern part of Columbiana County, ending in a narrow strip of the lighter Wooster silt loam, which marks the southern boundary of the glaciated area over a large part of eastern Ohio. Over the remainder of the county, south of the glaciated region, the principal soil type is the Dekalb silt loam, which covers a broad strip running diagonally across the State from Columbiana to Scioto County.

Agriculture.—The statistics of crop production show that corn and potatoes combined, oats, and wheat, each occupy nearly one-fifth of the area in crops, and the hay crops a little more than two-fifths, thus indicating that a fairly systematic rotation of crops is pursued.

The production of corn and oats has made practically no progress, whether in total yield or in yield per acre, for 40 years. That of wheat, however, has increased both in acreage and in yield per acre, although there has been a slight retrograde movement in area during the last decade. There has also been an increase in the area and the yield of the meadows.

The total number of livestock reached its culmination during the 'sixties, the number then being equivalent to 44,885 cattle, but since then there has been a decrease to the equivalent of 29,300 during the last decade, a loss equivalent to more than 15,000 cattle. The largest item of this loss has been in sheep, which have fallen from an average of 160,800 kept during the 'sixties, to 25,000 during the last 10 years. The number of cattle has remained stationary, the growth of the cities having caused a relative increase in the importance of dairying.

The purchase of commercial fertilizers has risen from an annual expenditure of $17,485 during the 'eighties to $49,280 during the last decade. These fertilizers have been used mainly on the wheat crop, and account for the increased production of wheat and hay, but the total quantity of phosphorus secured in these fertilizers has been less than half that which would have been returned to the land by 15,000 cattle or their equivalent in other livestock.

COLUMBIANA COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	38,299	48,602	59,029	68,590	76,619
White	.....	37,814	47,918	58,357	67,766	75,639
Nego	.....	485	684	662	812	967
Foreign born	.....	3,785	4,768	6,288	6,516	7,252
Rural	.....	.....	.....	.....	32,303	30,234
Urban	.....	.....	.....	.....	36,287	46,385

Population of cities or towns, 1910: East Liverpool 20,387; Salem, 8,943; Wellsville, 7,769; East Palestine, 3,537; Lisbon, 3,084; Leetonia, 2,665; Salineville, Columbiana, 1,582.

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area.....Acres..	.....	.....	.....	341,760
Land in farms.....Acres..	333,735	314,753	315,943	312,190
Improved land in farms.....Acres..	255,108	248,737	244,869	238,871
Woodland in farms.....Acres..	72,772	66,016	71,074	39,773
Other unimproved land in farms.....Acres..	5,860			33,546
Total number of farms.....Number..	3,576	3,566	3,753	3,921
Area of average farm.....Acres..	93.3	88.3	84.2	79.6
Improved land per farm.....Acres..	71.4	69.8	65.2	60.9
Value of all property per farm.....Dollars..	5,418	4,661	4,064	5,181
Value of land and buildings per farm.....Dollars..	4,850	4,042	3,466	4,399
Value of land and buildings per acre.....Dollars..	51.98	45.78	41.16	55.25

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Horses.....Number..	8,979	9,032	9,007	9,825	9,787	7,349
Cattle.....Number..	19,761	18,324	18,533	20,733	18,778	18,413
Sheep.....Number..	102,138	160,830	124,233	114,265	51,782	25,003
Hogs.....Number..	19,954	14,465	13,831	14,054	12,227	10,374
Cattle equivalent { Total	30,949	44,885	41,346	43,390	34,966	29,300
Cattle equivalent { Per 1,000 acres	.....	.....	162	174	143	123

FARM CROPS: Ten-year averages: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Corn.....Acres..	14,746	15,028	19,115	18,518	18,266	17,272
Bushels..	385,961	443,402	741,641	616,515	610,844	620,654
Bushels per acre..	26.1	29.4	38.1	33.2	33.2	35.9
Oats.....Acres..	15,134	15,236	18,467	18,184	19,399	19,525
Bushels..	315,701	432,707	542,941	583,975	585,251	595,306
Bushels per acre..	20.9	28.4	29.4	32.1	30.2	30.5
Wheat.....Acres..	25,779	16,735	18,683	21,520	21,658	19,879
Bushels..	286,074	179,332	242,282	310,155	344,279	320,955
Bushels per acre..	11.1	10.7	13.0	14.4	15.9	16.1
Rye.....Acres..	4,393*	3,189	1,032	646	410	257
Bushels..	25,066	28,785	11,041	6,729	3,648	3,161
Bushels per acre..	5.7	9.0	10.7	10.4	8.9	12.3
Meadows.....Acres..	26,933	26,911	31,026	37,268	38,239	41,607
Tons..	34,760	32,247	32,597	44,430	44,779	54,314
Tons per acre..	1.29	1.20	1.05	1.19	1.17	1.31
Clover.....Acres..	.....	7,788	6,779	6,859	5,109	5,112
Tons..	.....	8,209	7,276	8,594	6,200	6,822
Tons per acre..	.....	1.05	1.07	1.25	1.21	1.33
Pasture.....Acres..	.....	.....	81,495	91,545	82,876	104,860
Potatoes.....Acres..	.....	1,057	1,318	1,488	1,917	2,348
Bushels..	.....	97,937	121,103	134,759	194,243	249,446
Bushels per acre..	.....	92.7	91.9	90.0	101.3	106.2
Orchards.....Acres..	.....	6,561†	7,665	7,737	7,691	6,764
Apples.....Bushels..	.....	122,962	330,274	308,574	195,668	188,443

*2-year average. †3-year average.

COSHOCTON COUNTY

Location.—Coshocton County is near the middle of the eastern half of the State. Bounded on the north by Holmes; on the east by Tuscarawas and Guernsey; on the south by Muskingum, and on the west by Knox and Licking. Area, 558 square miles. Organized in 1811.

Geology.—The surface rocks are those of the lower productive coal measures—chiefly shales and sandstones with occasional thin seams of limestone. The terminal glacier moraine crosses the western end of the county.

Topography.—The surface of the county is very hilly, the only level land being the narrow valleys of the streams. The Killbuck and Walhonding, entering the county from the north and northwest, unite at Coshocton with the Tuscarawas, coming from the east, and flow southward as the Muskingum.

Soils.—The predominant soil of the county is the Dekalb silt loam, with small areas of sandy terrace and bottom lands in the stream valleys.

Agriculture.—The total area given to the cereal crops was at its maximum during the 'fifties; since then it has steadily diminished, while that given to meadows has increased; the records for the last decade indicating a total reduction of more than 17,000 acres, or more than 20 percent, in the area formerly given to the cereals, and an increase of about 24,000 acres in the area given to the hay crops. At the same time there has been a reduction of livestock equivalent to 9,000 cattle, thus liberating many acres of pasture land to be added to the meadows.

The yield per acre of corn has shown no decided gain in the 60 years. If the yields are averaged by 30-year periods there has been a slight gain in oats and wheat.

The expenditure for commercial fertilizers has amounted to an average of $4,668 annually for the 'eighties, $10,015 for the 'nineties, and $18,515 for the last decade, this amount being paid for 2,071,049 pounds, or a little more than 1,000 tons of fertilizers, or enough to give each acre of wheat about 90 pounds, if it were all applied to that crop.

The fertilizers purchased during this period have probably contained phosphorus equivalent to less than 250,000 pounds of phosphoric acid annually, with not more than 10,000 pounds each of nitrogen and potassium. The manure annually left on the land by 9,000 cattle should contain more than 500,000 pounds of phosphoric acid, together with more than 800,000 pounds each of nitrogen and potassium.

If we assume that the roots and stubble of a clover crop contain half as much nitrogen as the hay, and that all the nitrogen of the stubble and roots is obtained from the atmosphere, there would have been a restoration by the 5,000 acres of clover grown annually of about one-sixth as much nitrogen as would have been returned to the land by 9,000 cattle.

The only field experiments located on the Dekalb silt loam in Ohio are those at Carpenter, Meigs County. In these experiments 240 pounds of acid phosphate, divided between the corn and wheat in a 3-year rotation of corn, wheat and clover, has increased the yield as a 13-year average by 8.41 bushels of corn, 5.68 bushels of wheat and 339 pounds of hay. There is no reason to doubt that similar results would follow a more liberal use of acid phosphate in Coshocton County.

COSHOCTON COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	23,600	26,642	26,703	29,337	30,121
White	.....	23,567	26,582	26,621	29,245	30,022
Negro	.....	33	59	81	91	97
Foreign born	.....	1,832	1,596	1,200	1,009	882
Rural	.....	.....	.....	.....	22,864	20,518
Urban	.....	.....	.....	.....	6,473	9,603

Population of cities or towns, 1910: Coshocton, 9,603.

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area—Acres	.....	.....	.....	357,120
Land in farms—Acres	351,526	338,983	347,240	343,597
Improved land in farms—Acres	263,528	268,653	279,856	276,699
Woodland in farms—Acres	86,391	} 70,330	67,384	{ 51,825
Other unimproved land in farm—Acres	1,607	}		{ 15,073
Total number of farms—Number	2,944	3,089	3,364	3,200
Area of average farm—Acres	119.4	110.1	103.2	107.4
Improved land per farm—Acres	89.5	87.3	83.1	86.5
Value of all property per farm—Dollars	5,269	4,875	3,693	4,865
Value of land and buildings per farm—Dollars	4,678	4,282	3,103	3,990
Value of land and buildings per acre—Dollars	39.18	38.89	30.07	37.15

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Horses—Number	8,372	8,445	8,147	7,157	7,676	5,215
Cattle—Number	20,430	20,069	20,411	18,763	16,061	15,498
Sheep—Number	64,475	132,496	115,744	138,330	94,938	76,887
Hogs—Number	33,146	23,962	22,819	17,540	14,161	11,299
Cattle equivalent—Total	38,564	44,160	42,414	41,507	34,647	29,531
Cattle equivalent—Per 1,000 acres	.....	.....	161	155	124	107

Farm crops: Ten-year average production: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Corn—Acres	30,961	29,797	32,895	28,133	26,027	24,797
Corn—Bushels	1,051,211	924,295	1,189,872	969,999	860,921	873,020
Corn—Bushels per acre	34.2	31.0	36.1	34.4	33.0	35.2
Oats—Acres	9,849	9,775	12,427	8,837	10,239	11,085
Oats—Bushels	119,887	228,146	307,061	236,950	242,950	296,626
Oats—Bushels per acre	12.2	23.3	24.7	26.8	23.8	26.8
Wheat—Acres	31,158	23,357	25,678	34,525	30,596	23,110
Wheat—Bushels	339,780	227,044	282,480	423,074	396,759	273,322
Wheat—Bushels per acre	10.9	9.7	11.0	12.2	13.0	11.8
Rye—Acres	4,679*	2,498	482	323	840	476
Rye—Bushels	35,880	21,540	4,471	3,141	6,939	4,018
Rye—Bushels per acre	7.7	8.7	9.3	9.7	8.3	8.4
Meadows—Acres	14,655	18,387	20,182	27,474	29,356	35,974
Meadows—Tons	15,072	21,339	20,418	29,991	32,157	38,650
Meadows—Tons per acre	1.03	1.16	1.01	1.09	1.10	1.07
Clover—Acres	.....	2,315	3,602	4,491	3,823	5,229
Clover—Tons	.....	1,665	2,559	4,433	4,215	6,388
Clover—Tons per acre	.....	.72	.71	.99	1.10	1.22
Pasture—Acres	.....	.....	105,187	141,614	147,925	166,582
Potatoes—Acres	.....	766	850	1,010	1,230	1,186
Potatoes—Bushels	.....	60,423	71,298	86,805	92,221	105,070
Potatoes—Bushels per acre	.....	78.9	83.9	85.9	75.0	88.6
Orchards—Acres	.....	4,610	5,590	5,834	6,379	5,844
Orchards—Apples—Bushels	.....	167,336	198,853	244,501	109,524	135,893

CRAWFORD COUNTY

Location.—Crawford County is in the northwestern quarter of the State. Bounded on the north by Seneca and Huron, on the east by Richland, on the south by Morrow and Marion, and on the west by Wyandot. Area, 409 square miles. Organized in 1820.

Geology.—A triangular section of Crawford County, having its apex at the northeastern corner and extending to a width of about 7 miles on the southern line, lies over the Waverly shales. Next is a belt of Olentangy and Ohio, formerly called Huron shales, 4 to 8 miles in width, while the western half of the county is underlaid with the Columbus and Delaware, or "Corniferous" limestone. Everywhere, however, the rock floor is covered with glacial drift which in this case has been largely derived from the pulverizing of limestones.

Topography.—The surface of the county is level to gently rolling. The Sandusky River has its headwaters in several small streams rising in the western and southwestern part of the county, the river turning northward in Wyandot County. The Olentangy or Whetstone rises in the southeastern quarter. These streams have cut their channels to the depth of 50 to 60 feet in places.

Soils.—The predominant soil types are the Volusia silt loam and clay loam in the eastern half of the county, and the Miami silt loam and clay loam in the western half. A series of morainic ridges occur in the north central part of the county.

Agriculture.—Corn is the principal crop of the county, occupying nearly one-third of the area given to the grain and hay crops, and culminating in an average annual yield of more than a million and a quarter of bushels during the last decade. The yield per acre reached its maximum during the 'seventies, and has not equalled that of some other counties since.

Oats has grown steadily both in acreage and in yield per acre during the six decades. Wheat reached its maximum acreage during the 'eighties; since then there has been a considerable substitution of oats for wheat, in harmony with the general tendency on the level lands of northwestern Ohio.

The expenditure for commercial fertilizers has averaged $6,706, $10,829 and $24,449 annually for the last three decades, the quantity used during the last period being equivalent to about 90 pounds for each acre sown in wheat.

The livestock of Crawford County has been maintained at a relatively high level, although here as elsewhere throughout the State there has been a large reduction in the total and relative number, and the fertilizers purchased have not replaced the fertilizing elements that might have been recovered through livestock husbandry. It is probable that the slight improvement in crop yields has been chiefly due to better drainage.

CRAWFORD COUNTY STATISTICS

POPULATION; U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	25,556	30,583	31,927	33,915	34,036
White	.....	25,454	30,475	31,850	33,855	33,958
Negro	.....	101	108	77	59	77
Foreign born	.....	3,842	3,721	3,541	2,822	2,490
Rural	.....	.....	.....	.....	16,791	14,893
Urban	.....	.....	.....	.....	17,124	19,143

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area—Acres	.....	.....	.....	261,760
Land in farms—Acres	246,221	232,260	248,831	245,412
Improved land in farms—Acres	186,815	188,410	202,540	205,363
Woodland in farms—Acres	57,001	43,850	46,291	33,972
Other unimproved land in farms—Acres	2,405			6,077
Total number of farms—Number	2,456	2,294	2,640	2,494
Area of average farm—Acres	100.3	101.2	94.3	98.4
Improved land per farm—Acres	76.6	82.1	76.7	82.3
Value of all property per farm—Dollars	6,536	6,194	5,656	9,270
Value of land and buildings per farm—Acres	5,840	5,494	4,870	8,027
Value of land and buildings per acre—Dollars	58.22	54.29	51.64	81.57

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–99
Horses—Number	6,969	8,147	8,757	8,633	8,394	6,649
Cattle—Number	20,304	17,899	19,044	18,774	14,656	14,669
Sheep—Number	70,532	81,885	60,470	55,499	46,665	39,376
Hogs—Number	29,405	27,419	29,340	29,241	25,763	24,091
Cattle equivalent—Total	37,267	36,978	36,782	35,881	30,293	27,665
Cattle equivalent—Per 1,000 acres	.....	.....	197	190	150	135

FARM CROPS: Ten-year averages: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1860–99	1900–09
Corn—Acres	19,673	23,133	28,222	30,322	32,777	36,140
Corn—Bushels	631,210	706,558	1,117,939	1,045,484	1,110,018	1,282,051
Corn—Bushels per acre	32.0	30.5	39.3	34.4	33.8	35.5
Oats—Acres	11,450	11,818	16,608	16,765	20,117	24,267
Oats—Bushels	252,156	351,452	569,769	601,340	703,575	882,014
Oats—Bushels per acre	22.3	29.7	34.3	35.9	35.0	36.4
Wheat—Acres	15,189	17,775	24,600	32,706	27,843	25,660
Wheat—Bushels	177,946	230,812	398,397	489,324	439,469	425,919
Wheat—Bushels per acre	11.7	13.0	16.2	15.0	15.7	16.7
Rye—Acres	904*	551	214	210	302	122
Rye—Bushels	9,168	6,348	2,874	2,778	3,177	1,698
Rye—Bushels per acre	10.1	11.5	13.4	13.2	10.5	13.9
Meadows—Acres	21,766	19,324	16,057	17,206	25,186	24,187
Meadows—Tons	26,385	25,564	19,901	21,437	31,829	31,884
Meadows—Tons per acre	1.21	1.32	1.24	1.25	1.26	1.32
Clover—Acres	.....	7,041	10,807	10,888	8,940	14,041
Clover—Tons	.....	7,902	14,378	13,676	11,358	19,163
Clover—Tons per acre	.....	1.12	1.33	1.26	1.27	1.36
Pasture—Acres	.....	.....	33,870	32,566	35,144	57,798
Potatoes—Acres	.....	868	1,218	1,506	1,577	1,511
Potatoes—Bushels	.....	73,326	100,834	142,346	111,717	134,068
Potatoes—Bushels per acre	.....	84.5	82.8	94.5	70.8	88.7
Orchards—Acres	.....	3,965†	4,581	4,424	3,830	3,478
Apples—Bushels	.....	204,508	242,823	164,889	116,696	130,231

*2-year average. †3-year average.

CUYAHOGA COUNTY

Location.—Cuyahoga County is on Lake Erie. Bounded on the north by Lake Erie; on the east by Lake and Geauga Counties; on the south by Summit and Medina, and on the west by Lorain. Area, 463 square miles. Organized in 1810.

Geology.—For a strip 1 to 3 or 4 miles in width along the Lake and up the deep valley of the Cuyahoga River the upper rock strata belong to the Erie shales. In the southeastern corner of the county and near the southwestern corner are exposures of conglomerate. The remainder of the county is floored with sandstones and shales of the Waverly formation.

Topography.—The Cuyahoga River has cut a deep channel through the middle of the county, Rocky River a similar channel through the western end, and the Chagrin River another through the eastern end, the course of all being from south to north. Between these valleys the land lies as a level to gently rolling plateau, having an altitude of 100 to 550 feet above Lake Erie.

Soils.—In a strip several miles wide along the lake shore and extending a few miles up the valleys of the Cuyahoga and Rocky Rivers the prevailing type is the sandy loam of the Dunkirk series, derived from the sandy beaches which have been formed from age to age as the lake has become lower. Over the remainder of the county the soils are the clays and clay loams of the Volusia and Trumbull series, soils which in this county overlie the impervious, argillaceous Cuyahoga shales, and which are consequently wet and cold until drained.

Agriculture.—The proximity to a great and rapidly-growing city, together with the character of the soil, have been the prime forces in shaping the agriculture of the county. Corn has never exceeded 11,000 acres in area, and has steadily diminished, both in area and in yield per acre, for the last 40 years, while oats has occupied several thousand acres more than corn, and has increased in yield per acre. Wheat occupied only 4,000 to 5,000 acres during the first half of the 60-year period under review, but the area has been nearly twice as great during the last 30 years, while the yield per acre has steadily increased. The area in meadows and clover averaged more than 36,000 acres during the first 30 years, but has steadily diminished since. The passing of the horse-drawn street car and the entry of the automobile have had a profound effect upon the local demand for oats and hay, and in 1916 the area in oats had fallen to 11,775 acres, and that in hay crops to 24,744 acres.

Even the cattle have diminished, notwithstanding the steadily increasing demand for milk, the milk supply having been more and more drawn from greater distance, while the lands near the city have been largely given to small fruits, potatoes and other truck crops, the area in potatoes having steadily increased until since 1915 Cuyahoga County has held first place in the total acreage given to this crop, having held first place in proportionate acreage for a much longer period.

During the last three decades Cuyahoga County has led in the area given to grapes, Erie having held first place previously.

CUYAHOGA COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total		132,010	196,943	309,970	439,120	637,425
White		130,564	194,735	306,777	432,810	628,353
Negro		1,445	2,175	3,146	6,189	8,763
Foreign born		50,696	68,753	110,038	137,557	214,199
Rural					33,594	37,846
Urban					405,526	599,579

Population, 1910: Cleveland, 560,663; Lakewood, 15,181; East Cleveland, 9,179; Newburgh; 5,813; Rockport, 3,179; Cleveland Heights, 2,955; eight other villages with a population of more than 1,000.

FARMS: U. S. Census

Farms; U. S. census	1880	1890	1900	1910
Approximate land area—Acres				296,320
Land in farms—Acres	267,002	229,838	237,507	217,730
Improved land in farms—Acres	223,693	191,265	154,080	154,502
Woodland in farms—Acres	35,909	38,573	83,427	25,234
Other unimproved land in farms—Acres	7,400			37,994
Total number of farms—Number	4,169	3,936	4,571	4,493
Area of average farm—Acres	64.0	58.4	52.0	48.5
Improved land per farm—Acres	53.7	48.6	33.7	34.4
Value of all property per farm—Dollars	5,596	6,236	6,657	10,647
Value of land and buildings per farm—Dollars	5,199	5,792	6,252	9,934
Value of land and buildings per acre—Dollars	81.25	99.18	120.23	204.82

LIVESTOCK: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses—Number	8,197	11,571	14,243	17,472	*19,371	6,761
Cattle—Number	24,561	24,905	23,105	21,328	15,388	12,473
Sheep—Number	56,382	58,245	22,125	18,226	8,065	4,448
Hogs—Number	8,443	8,333	6,251	4,782	2,561	1,663
Cattle equivalent—Total						
Cattle equivalent—Per 1,000 acres			180	215	233	128

*7-year average.

FARM CROPS: Ten-year average production: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn—Acres	9,964	10,273	10,908	10,291	9,730	8,829
Corn—Bushels	340,219	383,457	478,309	326,691	312,894	273,971
Corn—Bushels per acre	34.1	36.9	44.4	31.7	32.1	31.0
Oats—Acres	6,876	8,976	12,417	15,549	14,115	13,404
Oats—Bushels	146,383	271,534	426,854	548,549	493,699	529,601
Oats—Bushels per acre	21.3	30.2	34.4	35.3	35.0	39.5
Wheat—Acres	4,197	4,558	5,108	10,813	10,875	7,682
Wheat—Bushels	52,047	57,462	83,287	191,313	185,241	142,776
Wheat—Bushels per acre	12.4	12.6	16.3	17.7	17.0	18.6
Rye—Acres	1,334*	1,180	912	859	753	642
Rye—Bushels	14,350*	15,169	14,069	15,323	12,476	12,618
Rye—Bushels per acre	10.8*	12.9	15.4	17.8	16.6	19.7
Meadows—Acres	35,638	36,928	35,107	32,559	30,810	24,036
Meadows—Tons	38,278	42,711	39,279	41,234	40,593	31,607
Meadows—Tons per acre	1.07	1.16	1.12	1.25	1.32	1.31
Clover—Acres		446	451	2,105	1,482	1,522
Clover—Tons		606	597	2,726	2,109	2,352
Clover—Tons per acre		1.36	1.32	1.30	1.42	1.55
Pasture—Acres			77,127	72,611	59,096	60,915
Potatoes—Acres		3,549	3,291	5,080	5,659	6,818
Potatoes—Bushels		282,757	242,887	444,318	494,519	600,862
Potatoes—Bushels per acre		79.7	73.8	87.5	87.4	88.1
Orchards—Acres		5,514†	5,331	5,861	4,908	3,853
Apples—Bushels		137,116†	230,652	263,216	143,458	139,363

*2-year average. †3-year average.

DARKE COUNTY

Location.—Darke County is on the western boundary of the State. Bounded on the north by Mercer and Auglaize; on the east by Shelby and Miami; on the south by Preble and Montgomery, and on the west by Wayne, Randolph and Jay Counties, Indiana. Area, 586 square miles. Organized in 1817.

Geology.—The floor of the county is limestone, belonging to the Clinton and Niagara series. This is carpeted everywhere with a thick covering of glacial drift, chiefly derived from limestones similar to those of the floor.

Topography.—The topography of the county is generally level, but is varied by a series of low, rounded ridges, having a northwest to southeast course, which owe their origin to deposits of glacial gravel. The northern part of the county lies on the divide between the lake and river drainage. Greenville Creek, the principal stream, flows from west to east near the middle of the county and joins the Stillwater, a tributary of the Miami.

Soils.—The prevailing soils are of the Miami series, but there are considerable areas over which the black, Clyde clay loam predominates, in the northern, northwestern and southeastern parts of the county, while the gravelly Bellefontaine soil is found in the southwestern part. The gravelly ridges in the central and northern part of the county have afforded considerable areas of naturally-drained land, besides affording great stores of excellent road material.

Agriculture.—During the first third of the 60-year period wheat was the leading crop of the county, but since then corn and wheat have changed places, and during the last decade corn occupied more land than all the small grains combined.

During this decade there has been considerable shifting from wheat to oats, due to the causes which have operated unfavorably to the wheat crop on the flat, black lands of the State.

With the exception of a slight drop during the 'nineties the acre-yield of corn and oats has steadily increased, while that of wheat rose slowly until the end of the century, when it suffered a slight decline.

Darke County is remarkable in the large area given to clover, the number of acres reported as in clover having considerably exceeded those in other hay crops for the last 40 years, a fact which offers one explanation of the general increase in crop yields. Another explanation is found in the fact that the total number of livestock has been well maintained, although there has been some reduction in the number per 1,000 acres, due to the increased area brought under cultivation.

It is interesting to observe that the value of land per acre was maintained in Darke County during the period of general depression in farm values during the 'nineties, notwithstanding the fact that there is no large city in or near the county.

The expenditure for commercial fertilizers has risen from $691 per annum during the 'eighties to $8,529 during the 'nineties and $21,134 during the last decade. Considering the effect produced by phosphates on the similar soil of the adjoining county of Miami, there is good reason to believe that a still more liberal use of such fertilizers would meet with a profitable response in Darke County.

DARKE COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	32,278	40,496	42,961	42,532	42,933
White	.....	31,717	39,917	42,469	42,111	42,557
Negro	.....	561	579	492	421	376
Foreign born	.....	1,881	1,940	1,540	1,133	1,021
Rural	.....	.....	.....	.....	35,749	35,101
Urban	.....	.....	.....	.....	6,783	7,832

Population of cities or towns, 1910: Greenville, 6,237; Bradford, 1,844 (Darke and Miami); Union City, 1,595; Versailles, 1,580; Arcanum, 1,361.

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area—Acres	.....	.....	.....	375,040
Land in farms—Acres	362,818	354,100	370,382	372,180
Improved land in farms—Acres	252,797	280,826	311,867	325,757
Woodland in farms—Acres	107,567	73,274	58,515	40,325
Other unimproved land in farms—Acres	2,454			6,098
Total number of farms—Number	4,493	4,669	5,365	5,503
Area of average farm—Acres	80.7	75.8	69.0	67.6
Improved land per farm—Acres	56.3	60.1	58.1	59.2
Value of all property per farm—Dollars	4,297	4,367	4,102	7,667
Value of land and buildings per farm—Dollars	3,820	3,868	3,563	6,840
Value of land and buildings per acre—Dollars	47.34	50.96	51.64	101.15

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses—Number	8,144	10,737	12,555	13,962	15,095	14,809
Cattle—Number	18,604	21,380	23,504	26,010	21,285	23,473
Sheep—Number	21,019	26,159	14,062	7,971	7,380	5,022
Hogs—Number	38,441	40,985	48,168	40,863	30,979	37,110
Cattle equivalent—Total	32,694	38,831	42,282	44,855	40,219	42,495
Cattle equivalent—Per 1,000 acres	.....	.....	167	160	129	131

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn—Acres	27,748	35,829	61,000	68,911	75,331	89,510
Corn—Bushels	828,773	1,117,321	2,264,539	2,596,500	2,676,750	3,681,655
Corn—Bushels per acre	29.7	30.2	37.2	37.6	35.5	41.2
Oats—Acres	7,231	9,592	16,462	15,743	19,080	33,988
Oats—Bushels	116,280	231,149	493,226	518,760	556,452	1,020,624
Oats—Bushels per acre	14.8	24.1	30.0	32.9	29.2	34.2
Wheat—Acres	28,134	37,588	44,220	61,254	65,975	51,783
Wheat—Bushels	329,893	476,005	596,040	909,809	1,018,684	762,522
Wheat—Bushels per acre	11.7	12.6	13.5	14.8	15.4	14.5
Rye—Acre	2,650*	1,448	950	533	1,231	905
Rye—Bushels	17,431	17,975	14,444	8,377	13,498	12,529
Rye—Bushels per acre	6.3	12.0	15.3	15.4	13.0	13.8
Meadows—Acres	10,528	9,165	7,719	11,855	14,890	16,697
Meadows—Tons	11,408	10,300	8,375	13,239	17,020	18,231
Meadows—Tons per acre	1.08	1.13	1.08	1.12	1.14	1.09
Clover—Acres	.....	8,977	14,118	18,607	22,457	26,165
Clover—Tons	.....	4,902	6,933	11,586	17,880	23,359
Clover—Tons per acre	.....	.55	.49	.62	.80	.89
Pasture—Acres	.....	.....	23,701	25,187	26,322	43,453
Potatoes—Acres	.....	863	1,624	2,311	2,287	1,359
Potatoes—Bushels	.....	47,234	114,319	177,770	132,041	99,006
Potatoes—Bushels per acre	.....	54.7	70.4	76.9	57.8	72.8
Orchards—Acres	.....	4,349†	5,439	4,161	4,502	3,633
Orchards—Apples—Bushels	.....	124,113	156,557	92,696	75,231	64,550

*2-year average. †3-year average.

DEFIANCE COUNTY

Location.—Defiance County is on the western boundary of the State. Bounded on the north by Williams and Henry, on the east by Henry, on the south by Putnam and Paulding, and on the west by Dekalb and Steuben Counties, Indiana. Area, 405 square miles. Organized in 1845.

Geology.—The southern edge of the county is underlaid with limestones of the Corniferous and Hamilton series; the remainder of the county, excepting a narrow strip in the northwestern corner, classed as probably belonging to the Waverly, lies over Huron shale, corresponding in character to the belt which extends across the State from western Erie County to Chillicothe, and southward to the Ohio River as an outcrop in the bottoms of the valleys, these shales covering the flanks of the "Cincinnati arch" of limestone. Everywhere the rock is covered with a thick sheet of glacial drift.

Topography.—The northwestern corner of the county is gently rolling, but the remainder is a flat plain, through which the Maumee River and its tributaries have cut their channels, which are sometimes 50 to 60 feet below the general level of the county but which rarely reach the rock.

Soils.—The northwestern corner of the county is covered by parallel, gravelly ridges, which were the shores of the primeval lake, and which are now covered with a soil that has been classed with the Miami silt loam or clay loam. Over the middle of the county the predominant soil is the heavy, dark, waterlaid Clyde or Fulton clay, which covers the larger part of Paulding County and parts of Van Wert, Putnam and Henry, excepting the vicinity of the Maumee River and its tributaries, where the better drainage has resulted in the accumulation of less organic matter than is found in the Fulton clay and has left a stiff, waxy clay that can only be successfully tilled under a comparatively narrow range of moisture conditions, as it breaks up in clods difficult to pulverize when dry. In the northeastern corner of the county the soil is the more tractable Clyde clay loam.

Agriculture.—The principal crops of the county are corn and wheat, which have shown a steady increase in area and in yield per acre for 60 years, the increase in both respects being chiefly due to extension of artificial drainage. The yields, however, are still below the average of the State.

In Defiance, as in other flat-land counties, there has been a marked shifting from wheat to oats during the last decade. The total area in meadows and clover slightly exceeds that in corn, clover occupying about one-third the area given to the hay crops.

The expenditure for fertilizers has reached an annual average of only $2,385 during the last decade. Judging from the results attained on the Paulding County Experiment Farm it is doubtful whether such fertilizers can be profitably used on the Fulton clay, but there is very little doubt that a larger use might be made of phosphorus in the eastern and western ends of the county, especially for sugarbeets, which have become an important crop in the county, occupying nearly 10,000 acres in 1916.

Before the most effective results can be expected from fertilizers or manure, however, there must be a well developed system of drainage.

DEFIANCE COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	15,719	22,515	25,769	26,387	24,498
White	.....	15,608	22,371	25,662	26,324	24,475
Negro	.....	111	144	107	63	23
Foreign born	.....	2,197	2,846	2,767	2,072	1,409
Rural	.....	.....	.....	.....	16,288	17,171
Urban	.....	.....	.....	.....	10,099	7,327

Population of cities or towns, 1910: Defiance, 7,327; Hicksville, 2,395.

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area ..... Acres	.....	.....	.....	259,200
Land in farms ..... Acres	227,999	230,240	244,798	249,682
Improved land in farms ..... Acres	126,429	150,437	176,546	190,187
Woodland in farms ..... Acres	97,331	79,803	68,252	45,787
Other unimproved land in farms ..... Acres	4,239			13,708
Total number of farms ..... Number	2,341	2,504	2,760	2,659
Area of average farm ..... Acres	97.4	92.0	88.7	93.9
Improved land per farm ..... Acres	54.0	60.1	64.0	71.5
Value of all property per farm ..... Dollars	3,975	4,662	4,320	8,612
Value of land and buildings per farm ..... Dollars	3,544	4,134	3,716	7,593
Value of land and buildings per acre ..... Dollars	36.34	44.93	41.89	80.86

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses ..... Number	*2,159	†4,748	5,731	*6,032	6,635	5,473
Cattle ..... Number	7,732	11,275	13,463	14,198	9,830	10,481
Sheep ..... Number	5,170	20,985	16,290	14,335	13,745	13,267
Hogs ..... Number	11,268	15,265	14,595	14,184	12,522	14,350
Cattle equivalent: Total	11,535	19,649	22,273	23,082	19,092	18,716
Cattle equivalent: Per 1,000 acres	.....	.....	176	153	108	98

*8-year average. †9-year average.

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn ..... Acres	6,961	11,228	17,720	21,191	25,034	30,878
Bushels	211,817	329,179	601,457	643,081	896,689	1,146,438
Bushels per acre	30.4	29.6	34.5	30.3	35.8	37.1
Oats ..... Acres	3,317	4,584	9,624	11,307	15,955	25,975
Bushels	58,480	110,879	292,712	351,383	495,173	356,657
Bushels per acre	17.6	24.2	30.4	31.1	31.0	33.0
Wheat ..... Acres	6,004	14,503	17,515	25,460	25,865	17,048
Bushels	68 738	172,592	244,064	360,801	358,693	254,912
Bushels per acre	11.4	11.9	13,9	13.8	13.9	15.0
Rye ..... Acres	545*	122	185	465	525	460
Bushels	3,928*	1,398	3,179	7,811	5,908	6,736
Bushels per acre	7.2*	11.5	17.2	16.8	11.2	14.6
Meadows ..... Acres	7,660	8,402	9,037	11,763	16,846	20,546
Tons	9,219	9,651	10,639	14,928	19,198	26,825
Tons per acre	1.20	1.15	1.18	1.27	1.14	1.31
Clover ..... Acres	.....	3,692	5,853	8,626	9,622	11,612
Tons	.....	4,775	6,032	8,730	8,928	14,249
Tons per acre	.....	1.29	1.03	1.01	.93	1.22
Pasture ..... Acres	.....	.....	10,764	12,308	12,556	25,670
Potatoes ..... Acres	.....	721	920	1,065	1,032	840
Bushels	.....	57,482	77,687	88,813	83,439	81,663
Bushels per acre	.....	79.7	84.4	83.5	80,8	97.2
Orchards ..... Acres	.....	2,372†	2,734	3,098	2,970	2,707
Apples ..... Bushels	.....	62,690†	96,307	120,216	66,423	59,461

*2-year average. †3-year average.

DELAWARE COUNTY

Location.—Delaware County is near the center of the State. Bounded on the north by Marion and Morrow; on the east by Knox and Licking; on the south by Franklin, and on the west by Union. Area, 445 square miles. Organized in 1808.

Geology.—The eastern quarter of the county is underlaid with the shales and sandstones of the Waverly. Across the middle of the county, covering about one-third its area, extends a belt of Huron shale, while the remainder of the county is chiefly underlaid with the Corniferous limestones and Water lime, these formations being separated from each other by an outcrop of Oriskany sandstone and from the Huron by a belt of the Hamilton group. Over all is spread the glacial drift to an average depth of about 25 feet.

Topography.—The general topography is gently rolling, with considerable areas of level land, there being no land too steep for cultivation excepting the banks of the streams. The county is drained by the Scioto River, the Whetstone or Olentangy, Alum Creek and Walnut Creek, all flowing from north to south through the county in courses approximately parallel and from 4 to 6 miles apart, and all cutting into the rock in the southern part of the county.

Soils.—Throughout the county the drift has been materially influenced by the underlying rocks. In the eastern part of the county the soils are classed with the Volusia silt loam and clay loam and in the western part with the Miami silt loam and clay loam, with small areas of the darker, Clyde clay loam. There are considerable areas of flat land on the divides between the streams which have been but imperfectly drained and the consequence is a cold, backward soil.

Agriculture.—The hay crops occupy the largest area in the county, averaging about 45,000 acres during the last two decades. Corn comes next, with an average of 38,000 acres, while the small grains combined follow, with about 30,000 acres.

The acre-yields have been practically stationary for the 60 years at around 35 bushels of corn, 27 bushels of oats and 12 bushels of wheat.

The livestock has decreased by the equivalent of 11,000 cattle during the last 30 years, while the annual expenditure for commercial fertilizers has been only $1,232, $7,113 and $13,000 annually for the three decades, respectively.

Both the Volusia and Miami soil types have shown a remarkable response to systematic fertilizing after drainage, in other parts of the State, and there can be no doubt that when the flat divides of Delaware County come under organized drainage and systematic crop rotation and fertilizing the county will make a very different showing.

DELAWARE COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	25,175	27,381	27,189	26,401	27,182
White	.....	24,618	26,770	26,568	25,819	26,506
Negro	.....	557	610	618	578	671
Foreign born	.....	1,749	1,695	1,365	971	744
Rural	.....	.....	.....	.....	18,461	18,106
Urban	.....	.....	.....	.....	7,940	9,076

Population, 1910; Delaware, 9,076.

FARMS: U. S. Census

Farms: U. S. census	1880	1890	1900	1910
Approximate land area—Acres	.....	.....	.....	284,800
Land in farms—Acres	284,587	273,225	282,396	276,582
Improved land in farms—Acres	217,228	226,185	234,482	230,113
Woodland in farms—Acres	63,548	47,040	47,914	35,573
Other unimproved land in farms—Acres	3,811			10,896
Total number of farms—Number	3,030	2,942	3,133	3,073
Area of average farm—Acres	93.9	92.9	90.1	90.0
Improved land per farm—Acres	71.7	76.9	74.8	74.9
Value of all property per farm—Dollars	5,188	4,889	4,266	7,651
Value of land and buildings per farm—Dollars	4,492	4,183	3,608	6,471
Value of land and buildings per acre—Dollars	47.84	4,503	40.04	71.90

LIVESTOCK: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses—Number	7,736	8,549	8,423	8,972	9,074	6,535
Cattle—Number	19,680	17,278	17,731	18,873	14,971	16,969
Sheep—Number	7,693	106,595	103,356	107,034	58,911	39,986
Hogs—Number	33,762	24,054	25,396	21,613	18,744	18,576
Cattle equivalent—Total	31,561	38,892	39,029	40,710	31,810	29,360
Cattle equivalent—Per 1,000 acres	.....	.....	180	180	136	128

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn—Acres	28,915	28,874	35,754	35,679	37,478	39,524
Corn—Bushels	997,045	969,154	1,323,343	1,271,590	1,263,783	1,360,556
Corn—Bushels per acre	34.5	33.4	37.0	35.6	33.7	34.5
Oats—Acres	5,544	5,699	7,086	6,908	10,976	13,080
Oats—Bushels	95,358	152,400	193,058	185,416	306,537	353,513
Oats—Bushels per acre	17.2	26.7	27.3	26.8	27.9	27.0
Wheat—Acres	11,256	13,613	15,439	26,364	20,676	15,029
Wheat—Bushels	123,629	149,288	210,731	317,558	278,711	175,261
Wheat—Bushels per acre	10.5	10.9	13.6	12.0	13.5	11.7
Rye—Acres	501*	684	393	204	360	915
Rye—Bushels	3,212*	7,326	4,396	1,759	2,549	9,639
Rye—Bushels per acre	6.4*	10.7	11.2	8.6	7.1	10.5
Meadows—Acres	17,564	22,172	23,613	30,877	38,681	38,306
Meadows—Tons	20,373	28,902	25,921	35,495	46,895	44,295
Meadows—Tons per acre	1.16	1.30	1.10	1.15	1.21	1.15
Clover—Acres	.....	2,494	3,386	6,792	6,893	7,223
Clover—Tons	.....	2,924	3,775	7,503	8,192	9,327
Clover—Tons per acre	.....	1.17	1.11	1.10	1.19	1.29
Pasture—Acres	.....	.....	73,315	100,930	82,494	105,470
Potatoes—Acres	.....	795	940	1,016	889	587
Potatoes—Bushels	.....	59,007	63,575	73,435	50,576	46,554
Potatoes—Bushels per acre	.....	74.2	67.6	72.3	56.8	79.3
Orchards—Acres	.....	3,728†	4,007	3,948	3,496	2,457
Orchards—Apples—Bushels	.....	145,011†	120,601	127,829	74,544	57,880

*2-year average. †3-year average.

ERIE COUNTY

Location.—Erie County is on the shore of Lake Erie, midway between the eastern and western boundaries. Bounded on the north by Lake Erie, on the east by Lorain County, on the south by Huron and on the west by Sandusky. Area, 256 square miles. Organized in 1838.

Geology.—The southeastern corner of the county lies over the Waverly. The Huron shale occupies about two-fifths of the county, in a belt extending from northeast to southwest, and the northwestern two-fifths is underlaid with limestones of the Hamilton, Corniferous, Waterlime and Salina formations, a narrow outcrop of Oriskany sandstone separating the Corniferous from the Waterlime.

Topography.—The surface of the larger part of the county is that of a level plateau, rising from a little above the level of the lake at the shore to 150 feet above that level at the south line of the county, through which the streams have cut their channels down to the level of the lake. The general level is broken by a promontory of the Berea grit at Berlin Heights which has withstood the planing action of the glacier, and the southeastern part of the county is gently rolling.

Soils.—The soil of the two eastern townships is a Volusia clay loam, excepting that they are crossed by a belt of Dunkirk sand resulting from an ancient beach of the lake, which extends from the east line of the county through Milan to Norwalk in Huron County. A similar beach occupies the west bank of the Huron River. North and west of these beaches much of the soil is black and sandy, mapped as chiefly Clyde clay loam, with outskirts of the Miami loams in the extreme western part.

Agriculture.—During the first half of the 60-year period there was considerable progress in the agriculture of the county, culminating during the 'seventies in larger acre-yields of corn, wheat and potatoes than have since been maintained.

The number of livestock kept has been smaller than in any of the adjoining counties, and has steadily diminished for 40 years. The expenditure for fertilizers amounted to $3,472, $8,160 and $19,497 annually for the last three decades, respectively, but the 1,000 tons of fertilizers purchased annually during the last decade probably contained less than half as much phosphorus, and not more than one-fortieth as much nitrogen and potassium as would have been returned to the land in the manure of the livestock, equivalent to more than 10,000 cattle, that has disappeared from the county since the Civil War.

The production of fruit has been a relatively large industry in Erie County, because of the proximity to the lake, which has given greater immunity from late spring frosts. Erie County has ranked next to Cuyahoga and far above any other county in the production of grapes.

ERIE COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	28,188	32,640	35,462	37,650	38,327
White	.....	27,845	32,170	35 030	37,224	38,015
Negro	.....	342	468	429	425	311
Foreign born	.....	7,402	7 782	7,821	7,102	6,118
Rural	.....	.....	.....	.....	17,786	18,338
Urban	.....	.....	.....	.....	19,664	18,989

Population of cities or towns, 1910: Sandusky, 19,989; Huron, 1,756; Vermilion, 1,369; Kelley's Island, 1,017.

FARMS· U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area ..... Acres	.....	.....	.....	163,840
Land in farms ..... Acres	149,943	136,606	148,416	144,319
Improved land in farms ..... Acres	127,472	122,077	123,140	119,010
Woodland in farms ..... Acres	18,483	14,529	25,276	12,057
Other unimproved land in farms ..... Acres	3,988			13,250
Total number of farms ..... Number	1,918	1,772	1,970	1,956
Area of average farm ..... Acres	78.2	77.1	75.3	73.8
Improved land per farm ..... Acres	66.5	68.9	62.5	60.8
Value of all property per farm ..... Dollars	6,199	3,342	5,354	8,089
Value of land and buildings per farm ..... Dollars	5,716	5,747	4 845	7,272
Value of land and buildings per acre ..... Dollars	73.09	74.54	64.34	98.54

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–00
Horses ..... Number	4,652	5,876	6,051	5,709	5,530	3,912
Cattle ..... Number	10,662	10,074	9,791	8,374	7,105	6,408
Sheep ..... Number	48,782	52,751	30,329	27,232	17,500	9,557
Hogs ..... Number	8,602	9,196	8,591	7,929	7,607	6,670
Cattle equivalent { Total	21,052	22,145	19,734	17,599	15,146	11,943
Cattle equivalent { Per 1,000 acres	.....	.....	155	144	123	100

FARM CROPS: Ten-year averages: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Corn ..... Acres	16,568	16,275	18,150	16,006	16,558	16,307
Bushels	549,273	506,520	739,109	508,688	553,418	548,149
Bushels per acre	34.0	30.5	40.6	31.7	33.4	33.6
Oats ..... Acres	5,404	7,330	9,577	10,191	12,218	14,539
Bushels	106,809	192,374	317,987	347,056	396,472	505,372
Bushels per acre	19.8	26.2	33.2	34.1	32.4	34.8
Wheat ..... Acres	8,052	11,688	15,318	20,615	19,388	14,611
Bushels	134,833	172,346	298,319	366,243	357,152	259,798
Bushels per acre	16.7	14,7	19.5	17.7	18.4	17.8
Rye ..... Acres	356*	170	134	211	558	560
Bushels	4,439	2,390	1,662	2,871	7,387	7,736
Bushels per acre	12.5	14.1	12.4	13.6	13.2	13.8
Meadows ..... Acres	11,037	12,085	10,501	9,453	11,208	9,730
Tons	15,206	16,570	13,194	13,134	14,744	11,248
Tons per acre	1.38	1.37	1.26	1.39	1.31	1.15
Clover ..... Acres	.....	2,703	3,726	6,156	4,630	5,411
Tons	.....	3,083	3,929	6,518	5,145	6,319
Tons per acre	.....	1.14	1.05	1.06	1.11	1.17
Pasture ..... Acres	.....	.....	23,693	21,238	18,503	23,759
Potatoes ..... Acres	.....	1,446	1,889	2,905	2,655	3,515
Bushels	.....	137,616	193,992	289,283	245,414	331,835
Bushels per acre	.....	95.2	102.7	99.7	92.5	94.4
Orchards ..... Acres	.....	2,879†	3,770	3,457	3,329	3,060
Apples ..... Bushels	.....	101,740	205,161	165,246	67,924	94,825

*2-year average. †3-year average.

FAIRFIELD COUNTY

Location.—Fairfield County is in the southeastern quarter of the State. Bounded on the north by Licking; on the East by Perry and Hocking; on the south by Hocking and Pickaway, and on the west by Pickaway and Franklin. Area, 495 square miles. Organized in 1800.

Geology.—Excepting a small area in the eastern part of the county which is underlaid by the lower coal measures, the floor of the county is the shales and sandstones of the Waverly series. This floor, however, is everywhere covered with glacial drift excepting in the southeastern part of the county.

Topography.—The surface of the county is hilly, with considerable areas in the southeastern quarter that are too steep for profitable cultivation. There are small areas of flat land in the northeastern part of the county near Buckeye Lake, and in the valleys of Brush Creek and the Hocking River. The northwestern part of the county is drained into the Scioto River by the headwaters of Little Walnut Creek. Brush Creek in the southeastern and Clear Creek in the southwestern parts of the county unite near its southern boundary with the Hocking, which originates near the center of the county and flows southeastward into the Ohio.

Soils.—The northern and western three-fourths of the county is covered with the Volusia silt loam, which occupies a considerable area in the interior of the State, east of the Scioto; a soil easily worked, generally needing artificial drainage, and gradually becoming deficient in lime, but quickly responsive to treatment and capable of great productiveness when properly handled. This is bordered by a narrow belt of Dekalb silt loam south of the limit of glaciation.

Agriculture.—Corn, the small grains, and meadows, occupy nearly equal areas of about 50,000 acres each, and the rate of yield has been practically stationary for the 60 years under review, the last decade showing slightly higher yields than any previous one.

There has been a decrease in livestock equivalent to 13,000 cattle, or 30 percent, during the 60 years, while the expenditure for fertilizers has risen from $5,468 annually during the 'eighties to $47,752 annually during the last decade, this amount being paid for 2,400 tons of fertilizers, which would probably have contained about half as much phosphorus and less than 5 percent as much nitrogen and potassium as would have been left on the land in the manure of 13,000 cattle.

The hills of Fairfield County are well adapted to fruit growing, and the production of apples had increased to more than 200,000 bushels annually during the 'eighties, but since then the yield has rapidly fallen off to only about one-third that quantity. There is no reason to doubt the posibility of renewing this industry.

FAIRFIELD COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	31,138	34,284	33,939	34,259	39,201
White	.....	30,824	33,881	33,545	33,857	38,747
Negro	.....	314	403	393	402	449
Foreign born	.....	1,940	1,560	1,253	886	703
Rural	.....	.....	.....	.....	25,268	26,108
Urban	.....	.....	.....	.....	8,991	13,093

Population of cities or towns, 1910: Lancaster, 13,093.

FARMS: U. S. Census

Farms: U. S. census	1880	1890	1900	1910
Approximate land area ..... Acres..	.....	.....	.....	316,800
Land in farms ..... Acres..	316,332	298,420	308,629	301,067
Improved land in farms ..... Acres.	246,739	249,089	266,174	260,999
Woodland in farms ..... Acres..	60,147	49,331	42,455	29,904
Other unimproved land in farms ..... Acres..	9,446			10,164
Total number of farms ..... Number..	3,181	3,185	3,425	3,407
Area of average farm ..... Acres..	99.4	93.7	90.1	88.4
Improved land per farm ..... Acres..	77.6	78.2	77.7	76.6
Value of all property per farm ..... Dollars..	5,678	5,466	4,832	7,838
Value of land and buildings per farm ..... Dollars..	5,082	4,834	4,156	6,838
Value of land and buildings per acre ..... Dollars..	51.13	5,159	46.13	77.35

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses ..... Number..	11,039	11,148	10,008	9,808	10,007	8,789
Cattle ..... Number..	25,413	24,030	23,427	23,103	18,808	19,424
Sheep ..... Number..	50,058	49,030	31,231	32,744	21,429	13,417
Hogs ..... Number..	44,042	36,369	41,970	34,204	29,201	29,205
Cattle equivalent { Total	45,862	43,718	40,755	39,606	33,878	32,475
Cattle equivalent { Per 1,000 acres	.....	.....	165	159	127	124

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn ..... Acres..	44,626	42,754	54,159	52,700	50,580	50,891
Bushels..	1,625,144	1,468,260	2,058,770	1,891,740	1,857,617	1,966,684
Bushels per acre..	36.4	34.1	37.9	35.9	36.7	38.7
Oats ..... Acres..	9,686	9,393	7,136	4,594	5,142	5,121
Bushels..	115,691	224,879	156,563	114,091	102,939	147,147
Bushels per acre..	11.9	23.9	22.0	24.8	20.0	28.7
Wheat ..... Acres..	36,349	36,345	38,411	48,982	45,335	40,520
Bushels..	480,539	388,847	465,324	570,307	621,171	558,445
Bushels per acre..	13.3	10.7	12.1	11.6	13.7	13.8
Rye ..... Acres..	1,153*	1,625	628	302	572	751
Bushels..	9,333*	16,664	6,191	3,061	5,596	9,100
Bushels per acre..	8.1*	10,3	9.8	10.1	9.8	12.1
Meadows ..... Acres..	14,440	15,872	14,513	17,806	25,082	33,641
Tons..	17,228	17,387	15,012	19,763	26,766	40,863
Tons per acre..	1.19	1.10	1.03	1.11	1.07	1.21
Clover ..... Acres..	.....	5,887	7,198	9,728	10,527	11,466
Tons..	.....	3,456	4,249	8,290	9,970	12,228
Tons per acre..	.....	.59	.59	.85	.95	1.06
Pasture ..... Acres..	.....	.....	64,429	91,867	94,553	90,355
Potatoes ..... Acres..	.....	1,093	1,415	1,688	1,502	967
Bushels..	.....	72,945	96,886	111,294	100,727	85,117
Bushels per acre..	.....	66.7	68.5	65.9	67.1	88.1
Orchards ..... Acres..	.....	5,067†	5,181	3,459	4,621	3,538
Apples ..... Bushels..	.....	185,691†	188,461	211,215	119,568	77,043

*2-year average. †3-year average.

FAYETTE COUNTY

Location.—Fayette County is in the southwestern quarter of the State. Bounded on the north by Madison; on the east by Pickaway and Ross; on the south by Highland, and on the west by Clinton and Greene. Area, 413 square miles. Organized in 1810.

Geology.—The floor of the county is limestone, belonging to the Waterlime formation under the eastern two-thirds of the county and to the Clinton and Niagara under the remainder. This floor is everywhere covered with a thick deposit of the clay, sand and gravel of the glacial drift.

Topography.—The surface of the county is generally level. There are small areas of rolling land in the northeastern part, and the southern part reaches the northern limit of the hilly region which borders the Ohio River.

The drainage of the county is to the southeast, in numerous small streams which unite with Paint Creek before it reaches the Scioto River.

Soils.—The soils of Fayette County are the Miami clay and silt loams, with their alternations of the darker Clyde loams in the depressions. In the western part of the county is a considerable area in which the darker soils predominate. The presence of lime insures a soil of permanent productiveness when drained and properly treated.

Agriculture.—Corn is the principal crop of the county, occupying a larger area than the small grains and hay crops combined. The yield of corn per acre has not increased during the 60-year period covered by the statistics and stands at about the average for the State. Wheat has increased in yield during the last 20 years by about 3 bushels per acre over the previous 30-year record. A comparatively small area is given to oats.

The expenditure for commercial fertilizers is reported at $1,448 annually during the 'eighties, $5,791 annually during the 'nineties and $23,502 for 1,447 tons for the next decade.

The livestock of the county has diminished by the equivalent of 13,000 head of cattle since the 'sixties; cattle, sheep and swine all sharing in the decline.

The statistical record of Fayette County indicates a too general neglect of crop rotation which must eventually result in diminishing yields.

FAYETTE COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total		17,170	20,364	22,309	21,725	21,744
White		16,095	18,919	20,628	20,325	20,513
Negro		1,074	1,444	1,680	1,398	1,231
Foreign born		548	466	326	232	142
Rural					15,974	14,464
Urban					5,751	7,277

Population of cities or towns, 1910: Washington Court House, 7,277.

FARMS: U. S. Census

FARMS: U. S. Census	1880	1890	1900	1910
Approximate land area—Acres				264,320
Land in farms—Acres	247,465	241,569	248,198	249,140
Improved land in farms—Acres	205,269	213,064	225,576	234,463
Woodland in farms—Acres	41,331	28,505	22,622	12,464
Other unimproved land in farms—Acres	865			2,213
Total number of farms—Number	1,957	1,864	1,955	1,846
Area of average farm—Acres	127.0	129.6	127.0	135
Improved land per farm—Acres	104.9	114.3	115.4	127
Value of all property per farm—Dollars	6,734	6,747	7,905	14,494
Value of land and buildings per farm—Dollars	5,642	5,845	6,944	12,911
Value of land and buildings per acre—Dollars	44.43	45.10	54.68	95.64

LIVESTOCK; Ten-year average numbers: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Horses—Number	6,566	9,051	8,660	8,968	9,764	6,497
Cattle—Number	22,284	19,573	17,698	18,214	15,764	14,921
Sheep—Number	47,132	50,752	28,470	25,648	18,344	8,498
Hogs—Number	38,563	50,419	57,062	39,796	33,571	28,692
Cattle equivalent—Total	37,419	38,741	34,911	33,726	30,716	25,137
Cattle equivalent—Per 1,000 acres			170	158	136	107

FARM CROPS; Ten-year averages: Ohio statistics

	1850–50	1860–69	1870–79	1880–89	1890–99	1900–09
Corn—Acres	41,485	53,161	65,147	57,837	56,405	55,023
Corn—Bushels	1,705,897	1,934,167	2,542,723	2,152,665	2,208,269	2,124,779
Corn—Bushels per acre	41.2	36.3	39.4	37.2	39.1	38.6
Oats—Acres	1,261	2,316	1,566	2,606	2,059	5,888
Oats—Bushels	15,822	54,427	32,946	76,674	47,892	199,813
Oats—Bushels per acre	18.5	23.5	21.0	29.4	23.2	33.9
Wheat—Acres	11,162	12,297	13,751	33,403	35,658	29,152
Wheat—Bushels	145,071	134,752	170,342	404,332	560,300	439,986
Wheat—Bushels per acre	13.0	10.9	12.4	12.1	15.7	15.1
Rye—Acres	874*	1,285	765	307	572	607
Rye—Bushels	8,471	15,367	9,293	3,292	5,596	6,795
Rye—Bushels per acre	9.7	12.0	12.1	10.7	9.7	11.2
Meadows—Acres	8,724	7,986	8,837	12,497	12,311	9,909
Meadows—Tons	9,204	8,074	8,706	11,898	13,705	9,973
Meadows—Tons per acre	1.05	1.01	.99	.95	1.11	1.00
Clover—Acres		787	1,706	3,470	4,456	5,789
Clover—Tons		203	377	1,902	3,067	5,319
Clover—Tons per acre		.26	.22	.55	.69	.92
Pasture—Acres			62,112	78,084	79,503	74,433
Potatoes—Acres		267	475	422	223	43
Potatoes—Bushels		23,096	36,780	33,282	14,677	3,431
Potatoes—Bushels per acre		86.5	77.4	78.8	65.8	79.8
Orchards—Acres		2,014†	1,895	1,792	1,451	512
Orchards—Apples—Bushels		40,998	54,742	50,894	31,186	7,530

*2-year average. †3-year average.

FRANKLIN COUNTY

Location.—Franklin County is located near the center of the State. Bounded on the north by Delaware; on the east by Licking and Fairfield; on the south by Pickaway, and on the west by Madison. Area, 517 square miles. Organized in 1803. Columbus the county seat and State capital.

Geology.—The Scioto River, entering the county a few miles from the northwestern corner, and flowing through the middle of the county from Columbus southward, marks approximately the boundary between the upper strata of limestone in the State—the "Corniferous"—and the Huron shale, which is the lowest of the non-calcareous rocks. The western two-fifths, approximately, of the county therefore has a limestone floor, while that of the eastern three-fifths is shale. The extreme northeastern corner is covered by rocks of the Waverly series. Everywhere, however, the rocks are covered with the glacial drift, which is usually of considerable thickness.

Topography.—The general topography of the county is that of a level plain, through which the streams have cut their channels to the depth of 50 to 125 feet. The main drainage channel of the county is the Scioto River, which is joined at Columbus by the Olentangy, and at the extreme southern line of the county by Walnut Creek. East of the Scioto, the Olentangy, Alum Creek and Walnut Creek enter the county from the north and flow southward 3 to 6 miles apart, Alum Creek joining the Walnut a few miles before the latter empties into the Scioto. The western part of the county is drained by the Darby, which forms the western boundary line of the county for several miles, and its tributaries.

Soils.—Although the rock floor is deeply covered with drift there is a general parallelism between the character of the soil here, as well as elsewhere in the State, and the rock beneath, due to the fact that both the rock exposures and the line of glacial travel have had a general north-and-south direction. In Franklin County the movement of the glacier has been southeasterly, so that soils of the Miami type extend some distance over the shales, leaving a comparatively small area in the northeastern part of the county to be classed with the Volusia and similar soils which cover the non-calcareous rocks of the State.

Owing to the flat topography of the table lands between the stream valleys, artificial drainage is a necessity over the larger part of the county, especially in the northeastern quarter. In the broad valley of the Scioto south of Columbus, and to a less extent along the Walnut and Darby, are considerable areas of rich bottom land.

Agriculture.—Corn is the principal crop of the county, occupying about two-fifths of the area in cultivation. The yield per acre has been practically stationary for 60 years, and the same is true of the yield of wheat, which has occupied about half the area given to corn in the average of the 60 years, although it has shown much greater variation in area from period to period.

In harmony with the rest of the State there has been a large reduction during recent years in the livestock of the county, while the expenditure for commercial fertilizers has increased from an annual amount of $3,218 during the 'eighties to $14,524 during the last decade.

FRANKLIN COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	63,019	86,796	124,087	164,460	221,567
White	.....	60,251	82,846	117,620	155,213	207,492
Negro	.....	2,768	3,936	6,445	9,223	14,006
Foreign born	.....	10,537	11,821	15,184	14,669	18,649
Rural	.....	.....	.....	.....	38,900	40,056
Urban	.....	.....	.....	.....	125,560	181,511

Population of cities or towns, 1910: Columbus, 181,511; Westerville, 1,903.

FARMS: U S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area ..... Acres	.....	.....	.....	330,880
Land in farms ..... Acres	327,620	306,218	310,053	306,261
Improved land in farms ..... Acres	264,661	268,362	274,495	277,044
Woodland in farms ..... Acres	56,594	37,856	35,558	19,741
Other unimproved land in farms ..... Acres	6,365			9,476
Total number of farms ..... Number	3,946	3,463	3,686	3,842
Area of average farm ..... Dollars	83.0	88.4	84.1	79.7
Improved land per farm ..... Acres	67.3	77.5	74.5	72.1
Value of all property per farm ..... Dollars	6,511	6,808	7,569	10,123
Value of land and buildings per farm ..... Dollars	5,918	6,135	6,897	9,133
Value of land and buildings per acre ..... Dollars	71.30	69.40	82.01	114.59

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses ..... Number	11,45	14,278	14,963	15,192	16,011	8,464
Cattle ..... Number	20,999	21,962	22,597	24,811	19,135	17,315
Sheep ..... Number	28,708	46,308	35,645	32,428	15,323	8,861
Hogs ..... Number	52,875	52,138	48,528	34,301	25,857	19,669
Cattle equivalent {Total	40,608	46,084	45,977	46,676	39,264	28,615
Cattle equivalent {Per 1,000 acres	.....	.....	174	174	143	103

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn ..... Acres	56,120	58,390	66,445	68,736	63,368	60,830
Bushels	2,105,405	2,072,942	2,430,759	2,394,672	2,356,390	2,176,548
Bushels per acre	37.7	35.1	36.7	34.8	37.2	35.7
Oats ..... Acres	7,263	7,857	7,466	5,315	9,219	14 153
Bushels	108,632	191,570	180,677	149,956	228,107	401,687
Bushels per acre	15.0	24.4	24.2	28.2	24.8	28.4
Wheat ..... Acres	19,847	23,454	27,439	46,975	43,023	31,973
Bushels	268,216	276,069	362,988	644,331	586,297	405,903
Bushels per acre	13.5	11.8	13.2	13.7	13.6	12.7
Rye ..... Acres	576*	1,059	802	232	577	1,285
Bushels	3,731*	10,137	8,983	2,487	5,114	15,851
Bushels per acre	6.5*	10.1	11.2	10.7	8.9	12.3
Meadows ..... Acres	14,625	16,828	17,427	24,319	30,807	34,247
Tons	15,687	20,325	19,054	27,922	34,987	39,835
Tons per acre	1.07	1.21	1.09	1.15	1.14	1.16
Clover ..... Acres	.....	2,805	3,928	6,375	8,094	7,875
Tons	.....	1,847	2,482	6,368	8,043	7,739
Tons per acre	.....	.66	.63	1.00	.99	.98
Pasture ..... Acres	.....	.....	50,601	54,354	55,484	77,361
Potatoes ..... Acres	.....	2,452	2,254	2,528	2,677	1,931
Bushels	.....	167,249	129,754	175,587	162,207	165,177
Bushels per acre	.....	68.2	57.5	69.4	60.6	85.5
Orchards ..... Acres	.....	4,475†	4,674	4,479	4,237	3,008
Apples ..... Bushels	.....	119,891†	135,657	201,107	106,075	56,984

*2-year average. †3-year average.

FULTON COUNTY

Location.—Fulton County is on the northern line of the State, in the second tier from the Indiana line. Bounded on the north by Lenawee County, Michigan; on the east by Lucas; on the south by Henry, and on the west by Williams. Area, 405 square miles. Organized in 1850.

Geology.—Fulton County lies on the westerly slope of the Cincinnati arch, and the Huron shale, which overlies the limestone on the eastern slope is found again here, though so deeply covered with drift that its boundaries have not been definitely located. It is assumed that the shale is in turn overlaid with Waverly rocks in the northwestern corner of the county.

Topography.—The surface of the county is generally flat, but it is traversed by the beaches of the ancient lake extension, having a general northeast-southwest direction, which give a rolling surface to parts of the county. The drainage is chiefly towards the Maumee, that from the western part of the county being through Bean Creek, which joins the Maumee at Defiance. Bad Creek and other small streams drain the southeastern quarter, and Ten-mile Creek, the northeastern.

Soils.—The predominant soil type of the county is the dark Clyde clay loam which covers a large part of northwestern Ohio. The ancient beaches give rise to small areas of the yellow Dunkirk sand, which is frequently flanked with the more loamy Clyde sandy loam. In the southeastern quarter of the county is a region known as the "oak openings," because in the early history of the State the underbrush had been kept down by annual fires and the oak trees generally stood a considerable distance apart on the low, sandy knolls, which were separated by more or less swampy prairies. Settlement, with the consequent cessation of fires, has permitted the growth of underbrush, and drainage is reclaiming the marshes.

Agriculture.—Fulton County is comparatively new, less than one-third of its present crop area having been under cultivation during the 'fifties, and less than two-thirds during the 'seventies. Until the end of the century corn and wheat occupied nearly equal areas, but during the last decade there has been a considerable shifting from wheat to oats. There has been no material increase in the yield per acre for 40 years.

The livestock of the county has not diminished in total number to the extent that it has in many other counties, but there has been a similar falling off in the relative number as compared with the area under cultivation, due to the rapid increase of this area.

For 10 years the Experiment Station maintained an experiment farm in the "oak openings" region, in which potatoes, wheat and clover were grown in rotation on the yellow sand of that region, with the outcome that under this system of agriculture there was not sufficient accumulation of fiber in the soil to prevent it blowing in the wind. But where this cropping was made the preliminary to seeding to grass which was allowed to stand several years and was pastured with sheep there was a rapid increase in productiveness, the sheep assisting materially by compacting the sand.

FULTON COUNTY STATISTICS

POPULATION; U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	17,789	21,053	22,023	22,801	23,914
White	.....	17,766	20,998	21,999	22,780	23,908
Negro	.....	23	55	23	21	6
Foreign born	.....	1,843	1,939	1,752	1,420	1,221
Rural	.....	.....	.....	.....	22,801	21,264
Urban	.....	.....	.....	.....	.....	2,650

Population, 1910: Wauseon, 2,650; Delta 1,689; Archbold, 1,082; Swanton, 1,058.

FARMS: U. S. Census

Farms: U. S. census		1880	1890	1900	1910
Approximate land area	Acres	.....	.....	.....	259,200
Land in farms	Acres	238,318	238,203	247,129	246,256
Improved land in farms	Acres	153,340	176,775	195,741	203,334
Woodland in farms	Acres	77,827	61,428	51,388	32,290
Other unimproved land in farms	Acres	7,151			10,632
Total number of farms	Number	2,926	3,016	3,273	3,124
Area of average farm	Acres	81.4	79.0	75.5	78.8
Improved land per farm	Acres	52.5	58.6	59.8	65.1
Value of all property per farm	Dollars	4,191	4,532	4,374	8,165
Value of land and buildings per farm	Dollars	3,660	3,945	3,764	7 075
Value of land and buildings per acre	Dollars	44.96	49.94	49.85	89.78

LIVESTOCK: Ten-year average numbers; Ohio statistics

		1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses	Number	2,399	5,095	6,274	7,312	7,688	6,148
Cattle	Number	9,546	11,726	15,551	15,375	12,792	14,801
Sheep	Number	11,468	39,633	29,862	37,853	27,296	14,242
Hogs	Number	7,372	10,618	15,927	19,153	16,702	18,133
Cattle equivalent	Total	13,829	21,846	26,404	28,387	24,880	24,186
	Per 1,000 acres	.....	.....	172	161	127	119

FARM CROPS: Ten-year averages; Ohio statistics

		1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn	Acres	7,214	11,685	19,901	23,546	28,363	34,740
	Bushels	211,645	379,647	792,814	810,996	963,068	1,375,201
	Bushels per acre	29.4	32.2	39.8	34.4	33.9	39.6
Oats	Acres	2,343	4,503	11,134	13,138	20,413	27,217
	Bushels	45,364	124,903	362,634	461,499	663,972	915,364
	Bushels per acre	19.4	27.7	32.5	35.1	32.5	33.6
Wheat	Acres	6,987	12,791	18,602	25,895	25,663	14,023
	Bushels	89,922	171,844	295,413	428,755	399,156	223,998
	Bushels per acre	12.7	12.4	15.9	16.5	15.6	16.0
Rye	Acres	811*	178	258	971	922	979
	Bushels	8,648*	2,111	3,078	13,663	11,878	12,155
	Bushels per acre	10.7*	11.9	11.9	14.1	12.9	12.4
Meadows	Acres	13,380	13,277	13,858	13,360	15,270	18,456
	Tons	18,672	17,248	16,779	16,664	19,824	21,411
	Tons per acre	1.39	1.30	1.21	1.25	1.30	1.16
Clover	Acres	.....	5,070	6,440	9,995	8,914	11,161
	Tons	.....	5,860	7,460	11,974	10,851	15,596
	Tons per acre	.....	1.16	1.16	1.20	1.22	1.39
Pasture	Acres	.....	.....	17,511	25,892	24,355	45,306
Potatoes	Acres	.....	803	1,317	1,178	1,374	1,072
	Bushels	.....	75,520	113,241	109,137	124,063	111,550
	Bushels per acre	.....	94.0	86.0	92.6	90.4	104.0
Orchards	Acres	.....	3,735†	5,216	5,278	4,429	2,833
Apples	Bushels	.....	118,660†	188,494	207,640	86,310	82,077

*2-year average. †3-year average.

GALLIA COUNTY

Location.—Gallia County is in the southeastern part of the State, on the Ohio River. Bounded on the north by Vinton and Meigs; on the east by the Ohio River and Mason County, West Virginia; on the south by Lawrence, and on the west by Lawrence and Jackson. Area, 449 square miles. Organized in 1803.

Geology.—The county lies between the upper and lower productive coal measures, the floor of the major portion of the county being the shales and sandstones, with occasional thin layers of limestone, which constitute the barren coal measures. The county lies south of the limit of glaciation.

Topography.—The surface of the county is very hilly, the only level land being the narrow flood plain and terrace bordering the Ohio River and a few small areas in the valley of Raccoon Creek, which creek, with the Ohio River, are the main drainage channels of the county. Raccoon Creek flows southwardly near the western border of the county.

Soils.—The principal soil type of the county is the Dekalb silt loam which covers the barren coal measures across the State, and the nearly-related Meigs series, which occupies a small area of the eastern side of the county. These soils are modified by occasional outcrops of limestone that are manifested by the improved productiveness of the soil of the hillsides below.

Agriculture.—Up to the end of the century approximately equal areas were given to corn and wheat. Since then there has been a considerable reduction in the area given to both crops, especially to wheat, which does not seem to have been compensated by increase in any other crop.

The average yields of both crops have been very low—25 bushels per acre for corn and 9 bushels for wheat for the 60 years, with no evidence of a tendency to improvement.

The livestock of the county has fallen from the equivalent of 24,000 cattle for the 20 years, 1860-1879, to the equivalent of 16,000 cattle during the last decade. As compared to the land in cultivation the number of livestock has always been low—the equivalent of 123 cattle for 1,000 acres in farms during the 'seventies and 69 per 1,000 acres during the last decade.

The expenditure for fertilizers is reported at $10,218 annually during the 'eighties, $16,441 annually during the 'nineties, and $14,481 annually during the last decade, this decreased expenditure being apparently related to the diminished area in crops. The quantity of fertilizers purchased during the last decade is reported at 1,527,144 pounds annually, which would provide less than 50 pounds annually for each acre given to corn and wheat. Livestock equivalent to nearly 15,000 cattle was kept during this period, which, if the manure produced during the winter months had been saved, should have furnished 2 tons of manure for each acre in corn and wheat.

The experiment farm at Carpenter, Meigs County, is located on the same general type of soil as that prevailing in Gallia County. On this farm corn, wheat and clover have been grown in rotation for 13 years, each crop being grown every season, with an average yield on land receiving no fertilizer nor manure of 28.2 bushels of corn and 10.4 bushels of wheat per acre, but with drainage and systematic crop rotation and fertilizing the yields have been profitably increased to a 13-year average of 44 bushels of corn and 26 bushels of wheat per acre.

There is no reason to doubt that similar treatment would produce similar results on Gallia County soil.

GALLIA COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	25,545	32,911	27,005	27,918	25,745
White	.....	22,743	30,565	24,613	24,635	23,867
Negro	.....	2,802	2,945	2,388	1,675	1,875
Foreign born	.....	1,156	935	639	413	307
Rural	.....	.....	.....	.....	22,846	20,185
Urban	.....	.....	.....	.....	5,432	5,560

Population of cities or towns, 1910: Gallipolis, 5,560.

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area ..... Acres	.....	.....	.....	287,360
Land in farms ..... Acres	275,084	267,007	279,420	273,942
Improved land in farms ..... Acres	194,567	207,869	226,422	213,586
Woodland in farms ..... Acres	75,600	59,138	52,998	37,042
Other unimproved land in farms ..... Acres	4,917			23,314
Total number of farms ..... Number	2,700	2,780	3,361	3,228
Area of average farm ..... Acres	101.9	96.0	83.1	84.9
Improved land per farm ..... Acres	72.1	74.8	67.4	66.2
Value of all property per farm ..... Dollars	2,560	1,999	1,929	2,278
Value of land and buildings per farm ..... Dollars	2,258	1,587	1,558	1,819
Value of land and buildings per acre ..... Dollars	83.63	57.09	18.76	21.42

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses ..... Number	4,063	5,712	5,979	5,657	5,514	3,928
Cattle ..... Number	11,476	14,149	14,881	14,825	11,485	9,368
Sheep ..... Number	18,001	28,337	15,564	16,643	17,949	10,659
Hogs ..... Number	15,229	16,522	15,709	11,369	8,232	4,640
Cattle equivalent { Total	18,862	24,347	23,989	23,283	19,617	14,826
Cattle equivalent { Per 1,000 acres	.....	.....	123	112	87	69

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn ..... Acres	17,709	21,242	25,112	22,064	23,368	20,426
Bushels	469,612	549,569	677,163	495,410	565,219	506,173
Bushels per acre	26.5	25.7	26.9	22.5	24.1	24.8
Oats ..... Acres	4,338	6,127	6,296	4,203	2,492	2,404
Bushels	36,831	104,204	99,096	64,832	30,029	35,507
Bushels per acre	8.5	17.0	15.7	15.4	12.1	14.8
Wheat ..... Acres	19,682	21,690	23,895	24,008	21,527	12,979
Bushels	203,003	169,722	212,891	196,376	216,756	127,383
Bushels per acre	10.3	7.8	8.9	8.2	10.1	9.1
Rye ..... Acres	76*	178	173	122	133	204
Bushels	699	2,111	1,384	1,039	1,007	1,531
Bushels per acre	9.2	11.9	8.1	8.5	7.6	7.5
Meadows ..... Acres	7,251	10,345	10,724	13,551	16,435	16,190
Tons	8,341	9,754	9,272	12,412	13,070	13,656
Tons per acre	1.15	.94	.87	.92	.80	.84
Clover ..... Acres	.....	1,715	1,569	2,129	1,670	1,097
Tons	.....	372	478	1,315	1,218	999
Tons per acre	.....	.22	.31	.62	.73	.91
Pasture ..... Acres	.....	.....	61,885	91,353	113,094	126,949
Potatoes ..... Acres	.....	864	1,183	1,118	575	251
Bushels	.....	67,647	88,280	76,403	37,246	22,334
Bushels per acre	.....	78.3	74.6	75.0	64.8	89.0
Orchards ..... Acres	.....	4,209†	4,684	4,648	6,419	5,787
Apples ..... Bushels	.....	117,819	130,503	161,888	107,907	51,884

*2-year average. †3-year average.

GEAUGA COUNTY

Location.—Geauga County is in the northeastern quarter of the State. Bounded on the north by Lake County; on the east by Ashtabula and Trumbull; on the south by Portage, and on the west by Cuyahoga. Area, 416 square miles. Organized in 1805.

Geology.—The surface rock over the larger part of the interior of the county is the Conglomerate. This is covered in some places by the sandstones and shales of the lower coal measures, while around the eastern, northern and western borders it is replaced by the upper shales of the Waverly. The entire county has been glaciated, but the underlying rocks have been the chief contributors to the soil.

Topography.—The average altitude of the county is 1,100 to 1,200 feet above the sea, or about the same as that of a large part of the interior of the State, but the close proximity of the lake, which is 500 feet lower, and the deep valleys which the streams have cut, give the impression of greater altitude. The surface of the interior is a rolling plateau, which is surrounded by deep valleys.

The drainage channels are the Cuyahoga River, rising near the middle of the county and flowing southwesterly to Akron, where it turns north; the Chagrin River, draining the western part of the county, and the Grand River in the northern part, both flowing to Lake Erie.

Soils.—The soils of the county are classed with the Volusia series, the predominant type being the Volusia clay loam, a soil better adapted to grass than to cultivated crops, and this fact, together with the lack of transportation, has contributed toward making dairying the chief industry of the county.

Agriculture.—Oats is the principal cereal crop in the county, steadily increasing in area and gaining a little in yield per acre through the 60 years, until during the last decade it occupied nearly as much land as corn and wheat combined. Nearly as much land is in meadow, however, as in all the cereal crops, although there has been a considerable reduction in the area given to the hay crops.

There has been a decrease equivalent to 16,000 cattle since the 'sixties in the number of livestock kept in the county, while the expenditure for commercial fertilizers has averaged $23,148 annually during the 'eighties, $27,628 during the 'nineties and $39,496 during the last decade, the quantity purchased during the last period averaging 1,600 tons annually, or about 100 pounds for each acre in the grain and potato crops.

The price paid for fertilizers would indicate the average use of fertilizers containing about 1 pound of ammonia, 8 pounds of phosphoric acid and 1 pound of potash in 100 pounds of fertilizer. The winter production of manure from 16,000 cattle would furnish more than enough to give 2½ tons to each acre of the area given to the crops mentioned, which would carry at least 25 pounds each of ammonia and potash and 15 pounds of phosphoric acid.

The extremely small area reported as in clover, together with the general character of the soil, indicates a deficiency of lime in the soil, and thus suggests another cause of low crop yields. The lack of limestone outcrops within the county and the inadequacy of transportation facilities make it difficult to overcome this deficiency, but unless both lime and phosphorus are supplied more generously than these statistics indicate it is not probable that any material improvement will be experienced in crop yields.

GEAUGA COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	14,190	14,251	13,489	14,744	14,670
White	.....	14,169	14,240	13,479	14,398	14,661
Negro	.....	21	11	10	16	9
Foreign born	.....	711	786	778	1,127	1,377
Rural	.....	.....	.....	.....	14,642	14,670
Urban	.....	.....	.....	.....	.....	.....

Population of cities or towns, 1910: Chardon, 1,542.

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area, Acres	.....	.....	.....	266,240
Land in farms, Acres	257,019	234,018	246,801	239,505
Improved land in farms, Acres	204,126	183,464	136,704	137,785
Woodland in farms, Acres	50,176	} 50,554	110,097	{ 45,935
Other unimproved land in farms, Acres	2,717	}		{ 55,785
Total number of farms, Number	2,462	2,339	2,520	2,574
Area of average farm, Acres	104.4	100.0	97.9	93.0
Improved land per farm, Acres	82.9	78.4	54.2	53.5
Value of all property per farm, Dollars	4,578	3,826	4,038	5,564
Value of land and buildings per farm, Dollars	3,987	3,264	3,382	4,635
Value of land and buildings per acre, Dollars	16.19	32.64	34.55	49.84

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses, Number	4,807	5,583	5,127	5,296	5,965	4,550
Cattle, Number	29,269	29,203	25,857	22,726	17,452	19,026
Sheep, Number	41,952	47,589	18,576	24,849	19,276	6,213
Hogs, Number	4,351	3,385	3,285	3,459	3,688	3,295
Cattle equivalent { Total	38,706	39,883	33,170	30,853	25,713	24,527
Cattle equivalent { Per 1,000 acres	.....	.....	162	168	188	178

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn, Acres	7,065	5,503	6,083	7,433	8,432	8,394
Corn, Bushels	208,617	176,063	258,690	231,087	280,291	257,313
Corn, Bushels per acre	29.5	31.8	42.1	31.9	33.2	30.7
Oats, Acres	4,495	6,160	9,021	11,914	11,761	13,523
Oats, Bushels	106,811	173,016	304,622	382,636	396,878	498,292
Oats, Bushels per acre	23.8	28.1	33.7	32.1	33.7	36.8
Wheat, Acres	3,550	2,906	3,691	8,305	8,400	5,766
Wheat, Bushels	45,244	36,208	52,415	122,840	139,117	86,830
Wheat, Bushels per acre	12.8	12.5	14.2	14.8	16.6	15.1
Rye, Acres	542	299	96	74	145	213
Rye, Bushels	3,551	3,481	1,043	881	1,719	3,246
Rye, Bushels per acre	6.5	11.6	10.8	11.9	11.9	15.2
Meadows, Acres	37,860	36,665	32,476	27,836	24,449	25,010
Meadows, Tons	40,145	40,254	34,832	34,943	32,600	34,811
Meadows, Tons per acre	1.06	1.10	1.07	1.26	1.33	1.39
Clover, Acres	.....	215	317	2,311	1,837	1,424
Clover, Tons	.....	253	454	3,356	2,658	2,293
Clover, Tons per acre	.....	1.18	1.43	1.45	1.44	1.61
Pasture, Acres	.....	.....	109,640	105,884	95,694	99,974
Potatoes, Acres	.....	1,090	1,807	2,135	2,345	3,007
Potatoes, Bushels	.....	108,703	156,786	135,350	211,866	260,847
Potatoes, Bushels per acre	.....	99.8	86.8	63.4	90.4	83.7
Orchards, Acres	.....	3,811	4,077	4,147	3,326	2,377
Orchards, Apples, Bushels	.....	127,188	205,012	196,586	113,750	120,047

GREENE COUNTY

Location.—Greene County is in the middle of the southwestern quarter of the State. Bounded on the north by Clark; on the east by Madison and Fayette; on the south by Clinton and Warren, and on the west by Montgomery. Area, 415 square miles. Organized in 1803.

Geology.—The floor of the county is limestone, belonging to the Clinton and Niagara formations over the eastern half of the county and to the Ordovician or Richmond over the western half. Over this floor is spread a sheet of glacial drift, 50 feet or more in thickness in the eastern range of townships, but much thinner in some other parts. The glacier, however, had traveled so far over limestone before it reached this county that the deposits left here have weathered into what is practically a limestone soil.

Topography.—The eastern quarter of the county is flat, but the remainder is gently rolling. There is no land in the county too rough for cultivation. The chief drainage channels are the Little Miami River with its tributaries, the two Massies Creeks in the northeastern part of the county, and Caesar's Creek in the southeastern part. The Little Miami flows southwardly across the western half of the county, cutting a channel 50 feet deep through the limestone in the northern part. Mad River crosses the northwestern corner of the county.

Soils.—The soils belong to the Miami and Bellefontaine series; those of the east half of the county being Miami clay loam with its usual accompaniment of the darker Clyde loam, and those of the western half consisting largely of the more gravelly Bellefontaine soils.

Agriculture.—Corn on the one hand, and wheat and oats on the other, have occupied practically equal areas during 50 of the 60 years under review. During the last decade there has been some shifting from wheat to corn and oats. The hay crops have had about half the area given to corn. Wheat is quite generally grown after corn.

The yield per acre of corn and oats has shown a slight increase and that of corn is a little above the State average. The acre yield of wheat has never again reached the level of the 'fifties, although there has been a considerable increase in the total production.

A large share of attention has been given in Greene County to the breeding of livestock, and there has been a smaller decline in the number of farm animals than in many other counties, although there has been a total decrease equivalent to 7,000 cattle since the 'seventies, the number for the previous 40 years being practically stationary. There has, however, been a considerable decrease in the relative number of farm animals, as compared with the area in cultivation.

The expenditure for commercial fertilizers averaged only $918 annually during the 'eighties but has risen to $22,334 annually for the last decade, paid for 1,170 tons, or enough to give each acre of wheat about 60 pounds.

GREENE COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total		28,038	31,349	29,820	31,913	29,733
White		24,199	26,774	25,650	27,554	25,760
Negro		3,815	4,553	4,060	4,055	3,970
Foreign born		1,588	1,336	1,125	894	599
Rural					22,917	21,027
Urban					8,696	8,706

Population of cities or towns,. 1910; Xenia, 8,076; Yellow Springs, 1,360; Jamestown, 1,133; Cedarville, 1,059.

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area, Acres				265,600
Land in farms, Acres	246,647	246,084	256,172	258,698
Improved land in farms, Acres	195,482	206,500	214,388	220,693
Woodland in farms, Acres	49,505	39,584	41,784	26,827
Other unimproved land in farms, Acres	1,660			11,178
Total number of farms, Number	2,398	2,387	2,637	2,575
Area of average farm, Acres	102.8	103.1	97.1	100.5
Improved land per farm, Acres	81.5	86.5	81.3	85.7
Value of all property per farm, Dollars	7,812	6,536	5,906	9,555
Value of land and buildings per farm, Dollars	7,018	5,776	5,192	8,345
Value of land and buildings per acre, Dollars	68.26	56.02	53.47	83.03

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses, Number	8,638	10,420	10,417	10,549	10,572	8,732
Cattle, Number	19,496	17,218	16,979	18,358	14,576	15,275
Sheep, Number	42,011	38,349	30,247	27,466	20,047	15,499
Hogs, Number	39,320	33,961	45,916	34,601	26,107	25,997
Cattle equivalent, Total	36,267	34,869	35,012	35,114	29,763	28,156
Cattle equivalent, Per 1,000 acres			179	174	139	128

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn, Acres	34,374	42,290	54,488	52,057	54,596	58,255
Corn, Bushels	1,309,547	1,582,191	2,214,114	2,040,514	2,157,285	2,418,404
Corn, Bushels per acre	38.0	37.3	40.7	39.1	39.5	41.5
Oats, Acres	5,400	4,978	5,025	4,497	5,269	8,024
Oats, Bushels	92,146	130,749	118,407	133,121	141,869	250,843
Oats, Bushels per acre	17.1	26.3	23.5	29.6	26.9	31.3
Wheat, Acres	27,364	31,806	33,900	49,238	47,055	38,453
Wheat, Bushels	424,042	383,641	511,451	687,077	695,751	547,568
Wheat, Bushels per acre	15.5	12.4	15.1	13.9	14.8	14.2
Rye, Acres				234	717	939
Rye, Bushels				2,340	5,492	12,136
Rye, Bushels per acre				10.4	7.7	12.9
Meadows, Acres	9,149	8,838	9,253	11,281	15,439	14,084
Meadows, Tons	10,495	11,613	11,102	14,178	20,641	17,214
Meadows, Tons per acre	1.15	1.30	1.20	1.26	1.34	1.22
Clover, Acres		4,520	7,527	11,744	13,009	12,103
Clover, Tons		1,765	2,721	5,007	8,292	9,925
Clover, Tons per acre		.39	.36	.42	.64	.82
Pasture, Acres				36,848	36,516	41,137	42,221
Potatoes, Acres		752	908	956	1,034	891(?)
Potatoes, Bushels		46,621	60,699	74,456	77,480	66,743
Potatoes, Bushels per acre		66.0	66.8	77.9	74.9	74.9
Orchards, Acres		3,786*	3,449	2,980	2,574	1,270
Apples, Bushels		58,218*	95,141	94,511	50,488	17,503

*3-year average.

GUERNSEY COUNTY

Location.—Guernsey County is in the middle-eastern part of the State, in the second range of counties from the Ohio River. Bounded on the north by Tuscarawas; on the east by Belmont; on the south by Noble, and on the west by Muskingum. Area, 518 square miles. Organized in 1810.

Geology.—The surface rocks are those of the barren coal measures, chiefly sandstones and shales, with occasional thin seams of limestone. The county lies south of the limits of glaciation.

Topography.—The county is very hilly, there being no level land excepting a few small areas of creek bottom, and very little plateau land. The drainage is through many small tributaries into Wells Creek, which flows northerly to the north line of the county and then westerly into the Muskingum.

Soils.—The soils are those of the Dekalb series, which have been formed by the disintegration of the sandstones and shales of the Barren coal measures, with a few areas which have been modified by outcrops of the thin limestone strata that are occasionally found in this formation.

Agriculture.—The area given to the grain crops has diminished during the 60-year period, while that in the hay crops has increased until during the last decade more land was in hay than in all the cultivated crops combined. The crop yields have been low and practically stationary. Very little clover is grown, which suggests acidity of soil, which would be expected from the geological origin.

The livestock of the county has diminished by the equivalent of 17,000 cattle, or 40 percent, since the 'seventies, while the annual expenditure for fertilizers has risen from $8,488 during the 'eighties to $15,707 during the 'nineties, and $15,986 for the last decade, this sum being paid for 830 tons of fertilizer.

Guernsey is one of nine counties in middle-eastern Ohio which have kept an average of more than 100,000 sheep during the 60 years under review, but there has been a large reduction of the sheep flocks in all of them during recent years.

GUERNSEY COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total		23,838	27,197	28,645	34,425	42,716
White		23,496	26,611	28,146	33,952	42,227
Negro		345	586	496	472	489
Foreign born		822	616	800	1,541	3,910
Rural					26,184	28,233
Urban					8,241	14,483

Population of cities or towns, 1910; Cambridge, 11,327:Byesville. 3,156.

FARMS; U. S. Census

Farms: U. S. census	1880	1890	1900	1910
Approximate land area—Acres				331,520
Land in farms—Acres	351,772	316,398	323,993	311,886
Improved land in farms—Acres	273,468	253,985	265,374	254,136
Woodland in farms—Acres	76,592	62,413	58,619	43,217
Other unimproved land in farms—Acres	1,712			14,533
Total number of farms—Number	2,865	2,931	3,228	3,051
Area of average farm—Acres	122.8	108.0	100.4	102.2
Improved land per farm—Acres	95.5	86.7	82.2	83.3
Value of all property per farm—Dollars	4,418	3,695	2,994	4,449
Value of land and buildings per farm—Dollars	3,853	3,150	2,411	3,629
Value of land and buildings per acre—Dollars	31.37	29.16	24.01	35.51

LIVESTOCK: Ten year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses—Number	8,393	7,823	7,141	6,366	6,617	4,201
Cattle—Number	17,605	16,568	16,300	15,973	11,914	12,456
Sheep—Number	47,390	143,414	149,601	158,489	89,705	62,121
Hogs—Number	22,142	15,323	12,288	9,948	8,529	4,908
Cattle equivalent—Total	32,951	40,315	40,630	39,183	28,354	23,360
Cattle equivalent—Per 1,000 acres			145	154	107	92

*9-year average. †8-year average.

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn—Acres	19,911	18,659	21,441	19,534	19,007	16,481
Bushels	605,379	561,420	752,320	657,142	619,669	533,880
Bushels per acre	30.7	29.9	35.0	33.6	32.6	32.4
Oats—Acres	10,700	10,956	9,601	7,565	7,710	6,266
Bushels	168,142	217,042	215,745	175,066	157,004	140,574
Bushels per acre	15.7	19.9	22.5	23.2	20.3	32.4
Wheat—Acres	26,000	14,058	13,822	17,591	16,991	11,789
Bushels	258,526	114,792	133,922	182,710	212,748	135,103
Bushels per acre	9.9*	8.1	9.7	10.4	12.5	11.5
Rye—Acres	1,886	1,587	472	300	300	326
Bushels	10,282	12,427	3,936	2,396	2,609	3,307
Bushels per acre	5.7	7.8	8.3	7.9	8.7	10.1
Meadows—Acres	18,206	21,191	26,565	32,888	34,229	38,070
Tons	19,472	22,241	25,731	33,612	34,637	39,085
Tons per acre	1.07	1.05	.97	1.02	1.01	1.02
Clover—Acres		1,218	1,840	1,178	1,325	1,057
Tons		861	1,438	1,344	1,473	1,333
Tons per acre		.71	.78	1.14	1.11	1.26
Pasture—Acres			127,589	143,719	147,043	148,343
Potatoes—Acres		508	561	611	577	561
Bushels		33,846	42,430	50,653	43,621	48,343
Bushels per acre		66.6	75.6	82.9	75.6	86.2
Orchards—Acres		4,276	5,079	5,706	6,078	5,025
Apples—Bushels		176,403	147,596	211,071	89,992	75,996

*2-year average.

HAMILTON COUNTY

Location.—Hamilton County is the southwestern county of the State. Bounded on the north by Butler and Warren; on the east by Clermont; on the south by the Ohio River and Campbell, Kenton and Boone Counties, Kentucky, and on the west by Dearborn County, Indiana. Area, 407 square miles. Organized in 1790.

Geology.—The upper rocks in Hamilton County are the group of limestones and shales which form the basis of the Cincinnati arch extending from Cincinnati to Sandusky. The upper member of this group is a blue limestone, which forms the floor of the high lands of the county. The rock is everywhere covered with drift or alluvium. On the higher lands the drift is sometimes but a few feet in thickness, but there are old river channels which have been filled with drift to a great depth, the Ohio River having at one time passed to the north of the present site of Cincinnati, reaching its present channel through that now occupied by the Great Miami.

Topography.—The topography of the county is that of a level or gently rolling plateau, lying about 900 feet above the sea, through which the Ohio and Miami Rivers and numerous tributary streams have cut their channels, which reach a depth of nearly 500 feet in the case of the larger streams. When the Ohio followed its northerly route its channel was much broader than that occupied by the present streams, and this old channel has been filled with 100 feet or more of drift, left as a flat plain. The chief drainage channels at present are the Ohio River, on the southern boundary of the county; the Little Miami, on the eastern boundary; Millcreek, near the middle of the county; and the Great Miami, near the western end. The Whitewater enters the southwestern corner and joins the Great Miami near its mouth.

Soils.—The predominant soil is the Cincinnati silt loam, which covers the higher and better drained lands of the eastern and central portions of the county. Where the drainage is more deficient the soil changes to the lighter-colored, Clermont silt loam, which becomes almost white when dry. The washing of the hillsides has removed much of the finer soil, and the resultant soil has been named Fairmount silty clay loam. A few small areas are covered with soils of the Miami type and the associated Clyde soil. The bottom and terrace soils are classed with the Fox and Genessee series.

Agriculture.—The proximity of a great city has necessarily exerted a large influence on the agriculture of the county. A large part of the richer bottom and terrace land has been used for truck crops, leaving the higher land for dairying and farm crops. Until the 'eighties there was a steady increase in the number of cattle kept, but with improvements in methods of transporting and distributing milk a larger proportion of the city's milk supply has been drawn from more remote regions and there has been the same shrinkage in the livestock of the county during the last two decades that has taken place generally over the State. The appearance of the electric railway has contributed to this shrinkage by reducing the number of horses.

The acreage and yields per acre of corn have been lower during the last half of the 60-year period, and those of wheat but little greater. Very little drainage has been done, and comparatively little use is made of commercial fertilizers, the expenditures for that purpose averaging but $4,378 annually during the last decade.

A county experiment farm has been established in this county.

HAMILTON COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	260,370	313,374	374,573	409,479	460,732
White	.....	252,934	302,793	359,777	391,764	436,397
Negro	.....	7,432	10,533	14,757	17,695	24,300
Foreign born	.....	88,499	82,247	83,942	68,358	65,893
Rural	.....	.....	.....	.....	59,711	53,473
Urban	.....	.....	.....	.....	349,768	407,259

Population of cities or towns, 1910: Cincinnati, 363,591; Norwood, 16,185; Madisonville, 5,193; St. Bernard, 5,002: seventeen villages of more than 1,000.

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area ..... Acres	.....	.....	.....	260,480
Land in farms ..... Acres	215,914	181,571	203,938	197,775
Improved land in farms ..... Acres	182,051	153,513	159,773	152,725
Woodland in farms ..... Acres	28,729	28,058	44,165	19,533
Other unimproved land in farms ..... Acres	5,134			25,517
Total number of farms ..... Number	4,064	3,227	4,111	4,129
Area of average farm ..... Acres	53.1	56.3	49.6	47.9
Improved land per farm ..... Acres	44.8	47 6	38.9	37.0
Value of all property per farm ..... Dollars	6,662	6,498	4,998	6,201
Value of land and buildings per farm ..... Dollars	6,216	5,991	4,500	5,545
Value of land and buildings per acre ..... Dollars	117.06	106.41	80.73	115.76

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Horses ..... Number	13,814	17,817	19,066	19,206	18,708	8,111
Cattle ..... Number	15,885	18,588	21,851	23,791	20,372	13,017
Sheep ..... Number	5,151	5,732	4,505	6,097	2,994	1,846
Hogs ..... Number	40,047	31,408	27,826	17,358	11,744	7,401
Cattle equivalent: Total	34,219	39,119	44,150	45,342	40,554	22,053
Cattle equivalent: Per 1,000 acres	.....	.....	243	295	254	144

FARM CROPS: Ten-year averages: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Corn ..... Acres	28,678	28,617	29,875	23,990	19,268	18,141
Bushels	1,097,284	1,066,755	1,008,498	804,510	590,176	600,758
Bushels per acre	38.2	37.0	36.4	33.3	30.6	33.1
Oats ..... Acres	5,316	8,406	7,874	7,964	4,333	3,835
Bushels	88,486	180,774	157,768	172,655	89,779	103,183
Bushels per acre	16.7	21.5	20.0	21.6	20.7	26.9
Wheat ..... Acres	11,389	12,961	9,154	12,805	16,859	13,888
Bushels	167,478	139,986	116,863	176,096	238,759	250,810
Bushels per acre	14.7	10.7	12.8	13.7	14.2	15.9
Rye ..... Acres	737	789	1,556	1,282	865	722
Bushels	7,570	8,646	18,294	15,203	11,490	9,926
Bushels per acre	10.3	11.0	11.7	11.8	13.3	13.7
Meadows ..... Acres	10,772	14,377	11,788	15,891	15,292	11,579
Tons	12,982	16,422	12,396	18,299	16,393	13,087
Tons per acre	1.22	1.14	1.05	1.15	1.07	1.13
Clover ..... Acres	.....	2,632	3,186	4,174	4,429	3,719
Tons	.....	1,803	2,925	4,158	4,901	4,332
Tons per acre	.....	.69	.92	.99	1.11	1.16
Pasture ..... Acres	.....	.....	19,105	21,790	21,507	30,363
Potatoes ..... Acres	.....	4,843	4,432	4,644	4,731	3,897
Bushels	.....	282,594	253,481	303,251	321,193	366,270
Bushels per acre	.....	58.4	57.2	65.3	67.9	94.0
Orchards ..... Acres	.....	1,564	5,527	4,207	3,606	2,186
Apples ..... Bushels	.....	.....	152,889	101,071	46,166	16,309

HANCOCK COUNTY

Location.—Hancock County is in the middle of the northwestern quarter of the State. Bounded on the north by Wood; on the east by Seneca and Wyandot; on the south by Hardin, and on the west by Allen and Putnam. Area, 535 square miles. Organized in 1820.

Geology.—The floor of the county is limestone, consisting of Niagara over the northeastern third of the county and Waterlime over the remainder. The rock is covered with glacial drift, which is cut through in places by the streams, giving access to the rock for quarrying.

Topography.—The surface of the county is flat to very gently undulating. The principal drainage is through the Blanchard River which, originating in the marsh lands of Hardin County, flows north to Findlay, where it joins Eagle Creek, which has parallelled it from Hardin County at a distance of 4 to 6 miles to the west, and forms the Auglaize, from here flowing westward and reinforced by Ottawa and other creeks, also coming from the south. The northern part of the county is drained by northward flowing branches of the Portage River.

Soils.—The prevailing soil of the county is the Miami clay loam, although over a strip 3 to 5 miles wide running east and west through the middle of the county, and another along the northern boundary, the darker Clyde clay predominates.

Agriculture.—Until the last decade corn and wheat have occupied nearly equal areas. During the last period, however, there has been the shifting from wheat to oats that has prevailed over all the northwestern counties. An increasing area has been given to the hay crops until their combined acreage has equaled that of wheat. A relatively large and increasing area has been given to clover.

The livestock of the county has been held at a high level throughout the 60 years, the drop at the end of the period being smaller than in most other counties, and the general rate of crop yields has been fairly well maintained. The annual purchase of fertilizers during the last decade has amounted to 430 tons.

An experiment farm has been operated at Findlay since 1909, on a soil representing the Miami clay loam. On this farm 120 pounds of acid phosphate applied to each crop has increased the yield of corn by 5 bushels as a 9-year average; that of oats by 5.6 bushels as an 8-year average, and that of wheat by 5 bushels as a 7-year average, the crops being grown in a 4-year rotation of corn, oats, wheat and clover, each crop being grown every season. For the 360 pounds of acid phosphate applied to the three preceding crops there has been a residual increase of nearly 600 pounds in the yield of clover hay, which would pay for all the fertilizer at average prices. When the same quantity of acid phosphate has been reinforced with 10 tons of manure, 5 tons each on corn and wheat, the increases have been: Corn, 12.3 bushels; oats, 5.7 bushels; wheat, 12 bushels, and hay, 2,270 pounds.

The unfertilized yields in this test have been: Corn, 29.1 bushels; oats, 32.1 bushels; wheat, 7.2 bushels, and hay, 1,850 pounds, but the very moderate treatment given has brought up the yields to averages materially above those of the county.

There is no reason to doubt that Hancock County soils in general would respond immediately and very profitably to more liberal treatment.

HANCOCK COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	23,847	27,784	42,563	41,993	37,860
White	.....	23,730	27,632	42,201	41,605	37,609
Negro	.....	117	152	356	386	249
Foreign born	.....	1,301	1,309	2,750	1,796	1,152
Rural	.....	.....	.....	.....	23,040	21,457
Urban	.....	.....	.....	.....	18,953	16,403

Population of cities or towns, 1910: Findlay, 14,858; McComb, 1,088; Fostoria, 9,597. (Hancock and Sandusky.)

FARMS: U. S. Census

Farms: U. S. census	1880	1890	1900	1910
Approximate land area ..... Acres	.....	.....	.....	342,400
Land in farms ..... Acres	335,841	314,817	322,267	319,419
Improved land in farms ..... Acres	215,761	238,549	258,375	268,581
Woodland in farms ..... Acres	114,026	76,268	63,892	39,779
Other unimproved land in farms ..... Acres	6,054			11,059
Total number of farms ..... Number	3,285	3,091	3,263	3,304
Area of average farm ..... Acres	102.2	101.8	98.8	96.7
Improved land per farm ..... Acres	65.7	77.2	79.2	81.3
Value of all property per farm ..... Dollars	6,142	6,635	5,648	10,575
Value of land and buildings per farm ..... Dollars	5,533	5,903	4,926	9,298
Value of land and buildings per acre ..... Dollars	54.14	58.00	49.86	96.15

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Horses ..... Number	8,182	8,768	10,458	10,319	11,289	7,764
Cattle ..... Number	17,952	21,437	23,305	23,627	19,427	19,506
Sheep ..... Number	29,181	62,412	46,632	48,858	41,836	32,494
Hogs ..... Number	27,167	33,807	39,577	29,743	32,002	31,001
Cattle equivalent { Total	31,769	39,827	42,384	41,806	38,100	33,519
Cattle equivalent { Per 1,000 acres	.....	.....	196	175	147	125

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-10
Corn ..... Acres	21,657	29,898	42,211	46,467	49,846	53,164
Bushels	665,234	849,551	550,335	1,519,784	1,753,345	2,039,434
Bushels per acre	30.7	28.4	37.0	32.7	35.1	38.3
Oats ..... Acres	8,046	8,505	9,412	11,575	12,173	19,032
Bushels	155,481	217,503	297,976	356,041	376,718	635,678
Bushels per acre	19.3	25.6	31.6	30.7	30.9	33.4
Wheat ..... Acres	17,789	25,246	34,014	48,668	45,411	36,756
Bushels	210,496	289,695	522,599	697,520	710,965	531,494
Bushels per acre	11.8	11.4	15.3	14.3	15.6	14.5
Rye ..... Acres	737	483	171	1,087	1,171	791
Bushels	7,570	4,475	2,504	17,638	15,320	12,449
Bushels per acre	10.3	9.3	14.7	16.2	13.2	15.7
Meadows ..... Acres	14,315	14,829	13,737	16,798	28,590	24,757
Tons	17,824	19,295	16,723	21,186	32,407	30,831
Tons per acre	1.24	1.30	1.22	1.26	1.13	1.24
Clover ..... Acres	.....	6,737	10,508	12,349	12,611	15,968
Tons	.....	6,444	11,036	14,362	14,877	20,561
Tons per acre	.....	.96	1.05	1.16	1.18	1.28
Pasture ..... Acres	.....	.....	35,046	45,266	34,533	58,887
Potatoes ..... Acres	.....	873	1,187	1,528	1,499	991
Bushels	.....	61,596	96,840	120,527	94,257	84,797
Bushels per acre	.....	70.5	81.5	78.9	62.8	85.5
Orchards ..... Acres	.....	4,780*	5,332	5,925	5,263	3,936
Apples ..... Bushels	.....	206,736*	287,598	186,227	102,343	62,816

*3-year average.

HARDIN COUNTY

Location.—Hardin County is in the northwest quarter of the State. Bounded on the north by Hancock; on the east by Wyandot and Marion; on the south by Union and Logan, and on the west by Auglaize and Allen. Area, 473 square miles. Organized in 1820.

Geology.—The surface rock over the larger part of the county is the Waterlime, with small areas of Niagara in the northeastern and western edges of the county and of Corniferous in the southern part. The rock is everywhere covered with glacial drift, except where the streams have removed the cover.

Topography.—The southern part of the county is level to gently rolling. The northern part is flat and occupied with several extensive marshes, in one of which, near the center of the county, the Scioto River originates, while the Blanchard River, a tributary of the Maumee, starts from the marshes along the northeastern boundary, and Hog Creek, rising in a similar marsh in the northwestern part of the county and flowing west, reaches the Maumee through the Ottawa and Auglaize Rivers.

Soils.—The predominant soil of the county is the Miami clay loam, but the marshes are surrounded by considerable areas of the black Clyde clay, while the marshes themselves, when drained, reveal extensive deposits of muck and peat.

Agriculture.—The marsh lands of the county, estimated at a total area of 40,000 acres, have been largely reclaimed by drainage and are extensively used for the production of onions and celery, from one-third to one-half the onions grown in the State coming from this county.

Corn is the principal crop of the county, occupying an area practically equal to that of the small grains combined. The yields of the cereals have been practically stationary for 40 years, as measured by rate per acre, although there has been considerable increase in the area under the plow and therefore in the total yield.

Hardin County, in common with northwestern Ohio in general, was settled at a later date than the eastern and southern parts of the State, and it was not until after the Civil War that its flat lands had been sufficiently drained to give a reasonable certainty to crop production. There is still a great deficiency in drainage.

The livestock of the county is experiencing the same reduction manifested elsewhere over the State, while the use of fertilizers is relatively small, the annual purchase during the last decade averaging about 345 tons.

HARDIN COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total		18,714	27,023	28,939	31,187	30,407
White		18,440	26,381	28,323	30,661	29,848
Negro		274	640	609	524	556
Foreign born		1,599	1,747	1,515	1,174	837
Rural					21,759	23,222
Urban					9 428	7,185

Population of cities or towns, 1910: Kenton,7,185; Forest, 1 285; Dunkirk, 1,109.

FARMS: U. S. Census

FARMS: U. S. Census	1880	1890	1900	1910
Approximate land area—Acres				302,720
Land in farms—Acres	268,002	268,219	290,992	279,905
Improved land in farms—Acres	164,694	204,030	233,864	236,846
Woodland in farms—Acres	93,051	64,189	57,128	36,328
Other unimproved land in farms—Acres	10,258			6,731
Total number of farms—Number	2,682	2,770	3,251	3,172
Area of average farm—Acres	99.9	96.8	89.5	88.2
Improved land per farm—Acres	61.4	73.7	71.9	74.7
Value of all property per farm—Dollars	4,518	4,839	4,526	8,707
Value of land and buildings per farm—Dollars	3,916	4,204	3,881	7,547
Value of land and buildings per acre—Dollars	39.77	43.43	43.36	85.50

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses—Number	3,402	5 638	7,224	8,287	8,058	5,196
Cattle—Number	9,562	12,933	14,941	17,999	13,396	12,877
Sheep—Number	11,155	36,666	36,172	51,123	39,621	23,741
Hogs—Number	15,952	21,106	23,534	25,779	21,119	23,256
Cattle equivalent—Total	15,675	24,348	28,136	33,976	27,528	28,776
Cattle equivalent—Per 1,000 acres			171	167	118	961

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn—Acres	12,595	19,387	29,448	37,450	37,449	40,808
Bushels	350,252	492,590	1,059,747	1,213,715	1,240,814	1,545,860
Bushels per acre	27.8	25.4	36.4	32.8	33.1	37.9
Oats—Acres	3,727	4,548	6,907	7,772	11,690	17,406
Bushels	57,864	109,050	234,971	258,328	326,977	567,067
Bushels per acre	15.5	24.0	34.0	33.2	28.0	32.6
Wheat—Acres	5,849	13 220	19,344	33,931	28,919	19,851
Bushels	60,762	147,465	296,411	448,131	412,317	252,027
Bushels per acre	10.4	11.1	15.3	13.2	14.3	12.7
Rye—Acres	616	412	81	466	705	704
Bushels	5,332	4,799	1,046	6,507	8,148	12,044
Bushels per acre	8.7	11.7	12.9	13.9	11.5	17.1
Meadows—Acres	7,608	10,559	11,615	17,283	23,713	17,151
Tons	8,876	12,656	13,560	21,008	29,575	22,994
Tons per acre	1.17	1.20	1.17	1.22	1.25	1.34
Clover—Acres		2,011	3,984	5,955	6,691	9,170
Tons		1,999	4,100	6,953	8,600	11,564
Tons per acre		1.00	1.03	1.17	1.19	1.26
Pasture—Acres			29,845	35,959	38,110	51,764
Potatoes—Acres		490	897	2,015	2,072	2,195
Bushels		36,442	74,784	131,262	151,403	144,897
Bushels per acre		74.4	83.3	65.1	73.8	66.0
Orchards—Acres		2,435*	3,172	3,372	2,922	1,686
Apples—Bushels		87,843	136,485	107,149	56 177	33,184

*3-year average.

HARRISON COUNTY

Location.—Harrison County is in the middle-eastern part of the State, in the second range from the Ohio River. Bounded on the north by Carroll and Jefferson; on the east by Jefferson; on the south by Belmont and Guernsey, and on the west by Guernsey and Tuscarawas. Area, 401 square miles. Organized in 1814.

Geology.—The county lies within the belt of barren coal measures which stretches across the State from Scioto to Columbiana County, and the surface rocks are in general the sandstones and shales, with occasional seams of limestone, which are found in that formation. The county lies south of the limits of glaciation.

Topography.—The surface is very hilly, there being no plateau land of any consequence within the county. The hills, however, are generally so rounded as to admit of cultivation, and the stream valleys contain considerable areas of bottom land.

The drainage is through the Connotton, flowing northwesterly through the northern part of the county; the two branches of Stillwater Creek, flowing in the same direction through the middle and southwestern parts, all being tributaries of the Tuscarawas, and several small creeks rising in the eastern part of the county and flowing into the Ohio.

Soils.—The upland soil of the northwestern half of the county has been derived from the sandstones and shales of the barren coal measures and is classed with the Dekalb series, while that of the southeastern half has been modified in many places by local outcrops of limestone, giving rise to an intermingling of sandstone and limestone soils to which the general name of Westmoreland has been given. This series includes soils ranging from the more silty soils of the Dekalb series to a limestone clay to which the name of Brooke clay loam has been given. The hills covered with this soil have produced excellent pasturage and have largely influenced the system of agriculture in the county.

Agriculture.—In proportion to area, Harrison has kept more sheep during the 60 years under review than any other county in the State, its limestone hills being especially adapted to sheep husbandry. In this county, however, as everywhere else in the State, the number of sheep has rapidly diminished during the last 30 years, less than half as many being enumerated during the last decade as for the 20 years, 1860-1879. There has been considerable reduction in all other livestock also, so that the total falling off has been equivalent to 13,000 cattle.

Corn and wheat have occupied approximately equal areas, while the land in hay crops has nearly equalled all that given to the cereals, and during the last decade there has been an increase in the area given to hay crops, coincident with a decrease in that given to the cereals and also in the number of livestock, indicating a tendency to produce hay as a market crop.

Comparing the 20 years, 1870-1889, with the 20 years, 1890-1909, there has been a falling off of 1 bushel per acre in the yield of corn and 3 bushels in that of oats, with an increase of 2 bushels in that of wheat. During the last period there has been an average annual purchase of 340 tons of commercial fertilizers, which presumably has been chiefly used on the wheat crop, and would give about 60 pounds to each acre of wheat sown during this period.

HARRISON COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total		18,682	20,456	20,830	20,486	19,076
White		18,197	19,809	19,932	19 856	18 464
Negro		485	647	897	628	612
Foreign born		464	391	461	274	602
Rural					20,486	19,076
Urban						

Population of cities or towns, 1910: Cadiz, 1,971.

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area....Acres.				256,640
Land in farms....Acres..	300,677	246,400	247,933	245,429
Improved land in farms....Acres..	247,315	202,986	208 073	202,133
Woodland in farms....Acres..	50,948	43,414	39,860	30,465
Other unimproved land in farms....Acres..	2,414			12,831
Total number of farms....Number.	2,196	2,170	2,390	2,256
Area of average farm....Acres..	136 9	113.5	103.7	108.8
Improved land per farm....Acres.	112.6	93.6	87.1	89.6
Value of all property per farm....Dollars..	6,193	5,439	4,018	5,969
Value of land and buildings per farm....Dollars.	5,476	4,649	3,328	4,965
Value of land and buildings per acre....Dollars..	40.00	40.96	32.09	45.63

LIVESTOCK: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses....Number..	6,394	5,714	5,394	5,794	5,959	4,337
Cattle....Number..	13,588	11,321	12,456	12,519	11,683	10,459
Sheep....Number..	123,467	194,199	187,592	177,821	123,783	92,364
Hogs....Number..	16,639	9,734	9,202	8,829	7,213	4,552
Cattle equivalent { Total	33,993	37,429	37,529	36,978	30,742	24,488
Cattle equivalent { Per 1,000 acres			152	182	148	121

FARM CROPS: Ten-year averages

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn....Acres..	15,332	13,715	15,163	14,184	13,397	11,220
Bushels..	512,261	483,271	621,859	551,399	506,579	433,905
Bushels per acre..	33.4	35.2	40.9	38.8	37.8	38.7
Oats....Acres..	9,926	8,499	7,935	6,225	7,256	7,077
Bushels..	194,446	249,848	221,758	184,453	170.464	195,472
Bushels per acre..	19.5	29.4	28.0	29.6	23.5	27.62
Wheat....Acres..	21,354	10,566	12,483	14,947	13,500	9,420
Bushels..	227,677	108,202	142,449	193,462	192,257	131,671
Bushels per acre..	10.7	10.2	11.4	12.9	14 2	14.0
Rye....Acres..	2,109*	1,324	320	1,594	184	89
Bushels..	10,293	12,507	3,196	14.731	708	676
Bushels per acre..	4.9	9.5	9 98	9.2	4.0	7.6
Meadows....Acres..	16,659	20,620	25,797	30,009	31,693	34,493
Tons..	19,171	25,906	27,109	36,020	33,319	36,283
Tons per acre..	1.15	1.26	1.05	1.21	1.03	1.05
Clover....Acres..		1,677	1,161	919	1,366	1,824
Tons..		1,592	1,187	999	1.661	1,110
Tons per acre..		.95	1.02	1.09	1.21	.61
Pasture....Acres..			108,421	123,864	123,553	122,324
Potatoes....Acres..		398	897	479	526	211
Bushels..		37,092	77,785	42,849	37,819	22,199
Bushels per acre..		93.2	83.3	89.4	71.8	105.2
Orchards....Acres..		3,794†	4,054	3,863	4,097	3,446
Apples....Bushels..		128,704	149,854	167,441	68,141	50,000

*2-year averages. †3-year averages.

HENRY COUNTY

Location.—Henry County is in the northwestern quarter of the State. Bounded on the north by Fulton; on the east by Lucas and Wood; on the south by Putnam, and on the west by Defiance and Williams. Area, 414 square miles. Organized in 1820.

Geology.—Henry County lies on the westerly slope of the Cincinnati Arch, and its superficial rocks, as listed from northwest to southeast, are the Huron shale, the lowest in the series and covering approximately one-third of the county; the Hamilton, a group of alternating shales and limestones extending diagonally southwest from the northeast corner of the county in a belt supposed to be 4 to 6 miles wide; a similar belt of Corniferous, a massive limestone, so named from the balls of hornstone found in it; a narrow band of Oriskany sandstone, crossing the townships of Richfield, Marion and Pleasant; and Waterlime under the remainder of the county. These rocks are everywhere covered with glacial drift.

Topography.—The surface of the county is flat, with low sandy ridges in the northwestern and southwestern parts, which were beaches of the ancient extension of the lake over this region. The drainage is through the Maumee River, which crosses the northern half of the county in a northeasterly direction, and small streams flowing into it.

Soils.—The predominant soil type is the Clyde clay loam, which shades into the Clyde sandy loam in the northeastern part of the county and on the ancient lake beaches.

Agriculture.—The county is part of the "great black swamp" of the early history of the State. Its settlement was slow, as only the small areas of sandy ridge land were tillable until drained, and drainage, to be effective, required organized effort which was not practicable until after the passage of the State drainage laws subsequent to the Civil War. The statistics show that the area under cultivation was more than three times as great during the last decade as during the 'seventies.

The yield of corn has been several bushels greater during the last 20 years than during the 20 years, 1870-89, and shows the high average of 40 bushels per acre for this period. There has also been a gain in the yield of oats, but a slight loss in that of wheat. Rye occupies an unusually large acreage, and has shown for 40 years the very unusual record of a yield several bushels per acre in excess of that of wheat. A comparatively large proportion of the area in hay crops has been given to clover.

There has been no material reduction in the total number of livestock—which has always been relatively small—but the increase in the area under cultivation has caused a decrease in the number of livestock per 1,000 acres in farms.

Commercial fertilizers are but little used, the average quantity purchased during the last decade amounting to but 170 tons annually.

HENRY COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	14,028	20,585	25,080	27,282	25,119
White	.....	14,017	20,552	25,041	27,252	25,111
Negro	.....	11	33	38	30	8
Foreign born	.....	2,171	2,806	2,961	2,563	1,817
Rural	.....	.....	.....	.....	23,643	21,112
Urban	.....	.....	.....	.....	3,639	4,007

Population of cities or towns, 1910; Napoleon, 4,007; Deshler 1,515; Holgate, 1,095

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area....Acres..	.....	.....	.....	264,960
Land in farms....Acres..	185,346	211,484	253,549	254,550
Improved land in farms....Acres..	107,144	146,624	204,054	217,227
Woodland in farms....Acres..	74,847	64,860	49,495	32,407
Other unimproved land in farms....Acres..	3,355			4,916
Total number of farms....Number..	2,358	2,775	3,387	3,032
Area of average farm....Acres..	78.6	76.2	74.9	84
Improved land per farm....Acres..	45.4	52.8	60.2	71.6
Value of all property per farm....Dollars..	3,751	4,229	4,635	9,601
Value of land and buildings per farm....Dollars..	3,314	3,705	4,056	8,597
Value of land and buildings per acre....Dollars..	42.16	48.62	54.15	102.35

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses....Number..	1,116	3,251	4,845	5,906	7,072	6,532
Cattle....Number..	4,289	7,404	10,705	12,517	12,360	12,526
Sheep....Number..	1,566	11,583	11,376	10,886	11,118	6,765
Hogs....Number..	5,929	8,920	11,622	16,848	15,492	15,533
Cattle equivalent {Total	6,155	12,705	17,850	21,196	22,093	21,288
Cattle equivalent {Per 1,000 acres	.....	.....	167	145	108	98

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn....Acres..	4,762	9,032	19,983	27,365	44,249	57,002
Bushels..	149,268	265,481	693,966	981,409	1,787,673	2,259,165
Bushels per acre..	31.3	29.4	35.7	35.5	40.4	39.6
Oats....Acres..	1,191	2,499	6,332	6,784	10,920	27 384
Bushels..	23,298	56,864	196,644	221,466	377,536	956,757
Bushels per acre..	19.5	22.7	31.1	32.5	34.6	34.9
Wheat....Acres..	2,388	7,989	14,763	26,670	36,764	25,746
Bushels..	33,972	98,355	221,387	414,410	515,762	383,140
Bushels per acre..	14.2	12.3	15.0	15.5	14.0	14.8
Rye....Acres..	186*	123	585	3,585	3,424	2,253
Bushels..	1,474	1,334	10,916	67,166	63,558	40,022
Bushels per acre..	7.9	10.8	18.6	19.2	18.5	17.8
Meadows....Acres..	3,712	4,892	6,703	8,737	11,589	14,425
Tons..	4,713	6,049	7,648	10,129	14,413	19,186
Tons per acre..	1.27	1.24	1.14	1.17	1.26	1.33
Clover....Acres..	.....	1,658	2,825	5,903	8,462	9,739
Tons..	.....	1,928	3,283	6,673	8,783	11,786
Tons per acre..	.....	1.17	1.16	1.14	1.04	1.21
Pasture....Acres..	.....	.....	4,202	5,806	9,243	18,401
Potatoes....Acres..	.....	536	1,157	1,275	1,271	839
Bushels..	.....	45,769	99,756	99,697	88,597	76,290
Bushels per acre..	.....	85.3	86.2	78.1	69.6	90.9
Orchards....Acres..	.....	2,080	3,073	3,326	3,645	2,814
Apples....Bushels..	.....	37,994	83,758	109,875	65,901	56,254

*2-year averages.

HIGHLAND COUNTY

Location.—Highland County is in the southwestern quarter of the State. Bounded on the north by Clinton and Fayette; on the east by Ross and Pike; on the south by Adams and Brown, and on the west by Brown and Clinton. Area, 549 square miles. Organized in 1805.

Geology.—Highland County is underlaid with limestones, the Clinton and Niagara formations occupying the eastern three-fourths of the county and the Ordovician or Richmond the remainder. Several small caves are found in the limestone hills in the eastern part of the county. Nearly the entire county is covered with glacial drift, the terminal moraine crossing the southeastern corner.

Topography.—The high plateau which occupies northern Clermont and Brown Counties extends into western Highland, but the middle and northern part of the county is rolling, and the southeastern part is very hilly. The drainage of the southern part of the county is through tributaries of Brush and Whiteoak Creeks, which flow southward into the Ohio River, and that of the northeastern part is through Rattlesnake and Rocky Fork into Paint Creek, which flows eastward into the Scioto at Chillicothe. The East Fork of the Little Miami River forms the northwestern boundary of the county for a short distance.

Soils.—The loess-like soil classed as Clermont silt loam covers the table land in the western part of the county. East of that the soil through the interior of the county is classed as Cincinnati silt loam, while the northeastern part is covered with Miami clay loam and the more rugged southeastern part with the residual limestone soil classed as Colbert silt loam.

Agriculture.—Highland is one of the older counties of the State, as measured by settlement by the white race, and the area in crops was nearly as large during the 'fifties as it has been since. Corn has been the leading crop of the county, but the production attained during the 'fifties has not since been equaled, except during the 'seventies. The corn crop of the county has been largely marketed through hogs, which in earlier days were driven on foot to Cincinnati. During later years the grain elevator has become an increasing competitor with the hog in the disposal of the corn crop, while the hay buyer is now taking not only much of the hay that was formerly marketed through cattle and sheep, but also the product of a largely increased acreage.

Under this system the livestock of the county has diminished to the equivalent, during the last decade, of 28,112 cattle, or enough to furnish less than a ton and a half of manure to each of the 95,436 acres reported as in the cereal crops during that period, assuming that 5 tons of manure are saved and used from the equivalent of one cow or steer each winter.

This small dose of manure has been supplemented during this last period by 5,543,721 pounds of commercial fertilizer, or 58 pounds for each acre in crops.

It will be observed that although there has been a large decrease in the number of livestock there has been a great increase in the area in pasture, which would seem to indicate a falling off in the productiveness of the pastures. Attention is called to the reference to this point on page 324.

HIGHLAND COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total		29,133	30,281	29,048	30,982	28,711
White		27,449	28,515	27,534	29,406	27,319
Negro		1,684	1,763	1,491	1,575	1,379
Foreign born		1,140	930	663	476	253
Rural					22,468	20,187
Urban					8,514	8,524

Population of cities or towns, 1910: Hillsboro, 4,296; Greenfield, 4,228.

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area—Acres				351,360
Land in farms—Acres	339,833	327,385	363,892	345,320
Improved land in farms—Acres	259,947	263,536	306,669	296,485
Woodland in farms—Acres	76,925	63,849	57,223	38,982
Other unimproved land in farms—Acres	2,961			9,553
Total number of farms—Number	3,127	3,262	3,539	3,519
Area of average farm—Acres	108.7	100.4	102.8	98.
Improved land per farm—Acres	83.1	80.8	86.7	84.3
Value of all property per farm—Dollars	3,720	3,029	3,603	5,422
Value of land and buildings per farm—Dollars	3,229	2,522	2,993	4,478
Value of land and buildings per acre—Dollars	29.71	25.12	29.11	45.69

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses—Number	9,753	11,617	10,269	9,663	9,243	7,065
Cattle—Number	21,025	20,404	20,570	21,991	16,772	16,582
Sheep—Number	29,430	34,589	18,248	25,768	22,096	15,458
Hogs—Number	52,962	50,833	48,359	38,032	27,779	29,191
Cattle equivalent—Total	39,017	40,563	37,500	38,034	31,003	28,112
Cattle equivalent—Per 1,000 acres			144	144	101	95

Farm crops: Ten-year average production: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn—Acres	49,302	54,013	59,984	51,538	50,352	55,259
Corn—Bushels	1,656,674	1,601,074	,937 643	1,454,366	504,213	1,540,686
Corn—Bushels per acre	33.6	29.6	32.3	28.2	29.8	27.9
Oats—Acres	5,380	6,740	7,451	6,452	2,648	4,599
Oats—Bushels	60,886	117,005	142,452	122,474	40,628	98,124
Oats—Bushels per acre	11.3	17.4	19.1	18.9	15.3	21.3
Wheat—Acres	36,596	39,082	34,664	36,753	40,270	34,318
Wheat—Bushels	409,573	311,895	304,679	347,902	467,095	419,674
Wheat—Bushels per acre	11.2	7.9	8.8	9.5	11.6	12.2
Rye—Acres	174*	650	449	425	835	1,260
Rye—Bushels	1,577	5,494	3,582	2,860	6,331	9,945
Rye—Bushels per acre	9.1	8.5	7.97	6.7	7.6	7.9
Meadows—Acres	12,966	15,198	15,367	22,337	24,419	23,835
Meadows—Tons	12,324	13,041	12,425	20,228	21,074	21,992
Meadows—Tons per acre	.95	.86	.81	.91	.89	.92
Clover—Acres		2,915	1,808	3,837	3,037	6,216
Clover—Tons		729	760	2,534	4,043	5,426
Clover—Tons per acre		.25	.42	.66	1.33	.87
Pasture—Acres			85,808	122,665	132,042	154,978
Potatoes—Acres		564	1,030	1,173	627	270
Potatoes—Bushels		35,340	68,074	70,292	34,196	16,553
Potatoes—Bushels per acre		62.6	66.1	59.8	38.5	61.3
Orchards—Acres		4,377†	5,249	4,900	4,473	3,054
Apples—Bushels		84,602	165,873	177,282	149,106	47,792

*2-year average. †3-year average.

HOCKING COUNTY

Location.—Hocking County is in the southeastern quarter of the State. Bounded on the north by Fairfield and Perry; on the east by Perry and Athens; on the south by Athens and Vinton, and on the west by Ross, Pickaway and Fairfield. Area, 411 square miles. Organized in 1818.

Geology.—The surface rocks are chiefly the sandstones and shales of the barren coal measures, with occasional strata of limestone found in the lower productive coal measures, which underlie the eastern part of the county and have made it one of the leading counties in the State in coal production. The glacial boundary crosses the northwestern corner of the county.

Topography.—The entire county is very hilly, there being practically no level land except in the narrow stream valleys. The Hocking River is the main drainage channel of the county, flowing in a southeasterly direction through the northeastern half of the county. The southwestern part is drained by headwaters of Salt Creek, a tributary of the Scioto.

Soils.—The principal soil type of the county is the Dekalb silt loam. There are small areas of lighter soils in the bottoms and terraces of the stream valleys.

Agriculture.—The effect of topography upon the agriculture of a region is illustrated by comparing Hocking with Clinton, both counties having the same total area. In Hocking, 25,646 acres were reported as in corn, oats and wheat during the 10 years, 1900-09, as against 102,549 acres in the same crops in Clinton. Not only is the area adapted to cultivation limited by the hills, but the yields are low; corn having begun and ended the 60-year period at 28 bushels per acre, and wheat at less than 11 bushels. The number of livestock in the county has been small and steadily diminishing. The purchase of fertilizers has risen to 1,000 tons annually during the last decade, or enough to give 200 pounds per acre to the 10,000 acres sown in wheat, while the equivalent of 13,000 cattle that have been retained in the county would furnish 5 tons of manure for each acre planted to corn if all the manure were carefully saved during 6 months of winter feeding. These are just half the quantities of manure and fertilizers which the Experiment Station is finding it most profitable to use.

In pioneer days the Ohio farmer converted as much of his produce as possible into meat and wool, because the meat could carry itself to market and, in wool, large values were carried in small weight. It would seem that these facts might still receive the consideration of such of the hill farmers as cannot have access to improved roads.

Many of the steep hillsides in the hilly counties that are now cultivated with difficulty and with a meager return might, if kept in grass and systematically fertilized, yield a larger value of produce and at a much lower labor cost than they are now doing. The mistake that has been generally made in pasture management, however, is the assumption that pastures do not need fertilizing. In milk production or in the growth of young animals there may be a greater exhaustion of phosphorus from the land than in grain production, and phosphorus has been found to be the first element requiring renewal on most Ohio farms.

HOCKING COUNTY STATISTICS

POPULATION; U. S. Census

	1860	1870	1880	1890	1900	1910
Total		17,925	21,126	22,658	24,398	23,650
White		17,783	20,921	22,524	24,144	23,506
Negro		142	205	133	252	143
Foreign born		863	836	1,028	847	818
Rural					20,918	18,809
Urban					3,480	4,850

Population of cities or towns, 1910: Logan, 4,850; Murray, 1,386.

FARMS U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area—Acres				263,040
Land in farms—Acres	252,944	227,583	244,206	225,928
Improved land in farms—Acres	174,846	163,372	179,609	158,386
Woodland in farms—Acres	72,290	64,211	64,597	48,354
Other unimproved land in farms—Acres	5,806			19,188
Total number of farms—Number	2,115	1,966	2,255	1,985
Area of average farm—Acres	119.6	115.8	108.3	113.8
Improved land per farm—Acres	82.7	83.1	79.6	79.8
Value of all property per farm—Dollars	2,747	2,704	2,110	3,147
Value of land and buildings per farm—Dollars	2,387	2,299	1,670	2,562
Value of land and buildings per acre—Dollars	19.96	19.85	14.42	22.51

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses—Number	4,277	5,244	4,761	3,714	3,959	2,899
Cattle—Number	10,280	11,733	11,525	10,122	9,434	8,460
Sheep—Number	17,268	35,480	26,485	42,031	23,710	13,766
Hogs—Number	16,779	15,900	12,973	7,836	6,037	4,889
Cattle equivalent—Total	17,962	22,115	20,232	18,823	16,368	13,225
Cattle equivalent—Per 1,000 acres			116	115	91	83

FARM CROPS: Ten-year average: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn—Acres	14,819	15,875	17,771	13,552	15,173	13,579
Corn—Bushels	417,872	451,886	509,047	368,596	421,844	383,182
Corn—Bushels per acre	28.1	27.0	28.5	27.1	27.8	28.2
Oats—Acres	6,589	4,871	4,660	2,108	1,650	2,050
Oats—Bushels	48,028	84,850	71,672	29,826	26,603	38,705
Oats—Bushels per acre	7.3	17.4	15.4	14.1	16.1	18.9
Wheat—Acres	17,972	16,033	12,216	11,399	12,943	10,017
Wheat—Bushels	180,379	123,367	97,106	105,786	155,408	108,335
Wheat—Bushels per acre	10.3	7.7	7.9	9.3	12.0	10.8
Rye—Acres	448	851	309	261	247	241
Rye—Bushels	2,817	6,799	2,302	2,136	1,243	2,331
Rye—Bushels per acre	6.8	8.0	7.4	8.2	5.0	9.7
Meadows—Acres	7,612	8,815	9,422	14,176	14,982	16,631
Meadows—Tons	8,807	9,075	8,300	12,340	12,522	16,156
Meadows—Tons per acre	1.15	1.03	.88	.87	.84	.97
Clover—Acres		2,009	2,146	1,264	1,794	1,550
Clover—Tons		863	1,033	893	1,411	1,558
Clover—Tons per acre		.43	.48	.71	.79	1.00
Pasture—Acres			61,862	95,160	103,335	97,305
Potatoes—Acres		528	841	999	761	627
Potatoes—Bushels		33,726	51,648	53,349	50,524	52,124
Potatoes—Bushels per acre		58.3	61.4	53.4	66.4	83.1
Orchards—Acres		3,114*	3,740	3,889	3,646	2,579
Apples—Bushels		112,798	86,037	131,885	82,454	46,889

*3-year average.

HOLMES COUNTY

Location.—Holmes County is in the northeastern quarter of the State. Bounded on the north by Ashland and Wayne; on the east by Tuscarawas; on the south by Coshocton and on the west by Knox and Ashland. Area, 418 square miles. Organized in 1824.

Geology.—The surface rocks are the sandstones and shales, with occasional thin seams of limestone, which characterize the lower productive coal measures, excepting in the extreme northwestern corner, where the Conglomerate and upper Waverly rocks come to the surface. The southern limit of glaciation traverses the second range of townships from the northern boundary and turns south through the western range, the larger part of the county being unglaciated.

Topography.—The Killbuck, rising in the swamps of southern Medina County and flowing southwardly through Wayne and Holmes, has carved through the original plateau of about 1,200 feet elevation a steadily-deepening channel, until in Holmes County its present flood plain is 350 to 400 feet below the original plateau level. The Mohican, rising in Richland and Ashland Counties and flowing south along the western border of Holmes, and tributaries of the Tuscarawas, flowing eastward from the eastern part of the county, together with numerous smaller streams, have converted a considerable part of the county into a region of steep hills, which in places might almost be called mountains, but there are large areas of land not too rolling for successful cultivation, and the crop yields indicate an improving condition of agriculture.

Soils.—North of the terminal moraine the hills are less abrupt after leaving the stream valleys, and are covered with the silty loam which covers much of Wayne County and has been named the Wooster silt loam. Over the remainder of the county the soil belongs to the Dekalb series, excepting the narrow bottom lands in the valleys.

Agriculture.—Wheat has been the leading crop of the county throughout the statistical period, although there has been the tendency during the last two decades to substitute oats for wheat that has been in evidence over the northern half of the State. Excepting a drop during the 'nineties, there has been a steady increase in the yield of wheat per acre, and corn and oats both show larger yields during the last decade than for the preceding period.

The livestock of the county has diminished by the equivalent of 8,000 cattle, a smaller loss than has occurred in most counties of the State, while the expenditure for commercial fertilizers has risen to $24,322 annually during the last 10 years, paid for about 1,240 tons, or 100 pounds for every acre sown in wheat during this period.

HOLMES COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	18,177	20,776	21,139	19,511	17,909
White	.....	18,173	20,774	21,133	19,511	17,901
Negro	.....	4	2	6	.....	8
Foreign born	.....	1,611	1,477	1,166	765	524
Rural	.....	.....	.....	.....	19,511	17,909
Urban	.....	.....	.....	.....	.....	.....

Populationof cities o r towns, 1910; Millersburg, 2,020.

FARMS: U. S. Census

Farms: U. S. census	1880	1890	1900	1910
Approximate land area ..... Acres	.....	.....	.....	267,520
Land in farms ..... Acres	251,523	253,375	253,367	258,403
Improved land in farms ..... Acres	183,052	201,375	196,201	198,875
Woodland in farms ..... Acres	66,381	52,000	57,166	43,717
Other unimproved land in farms ..... Acres	2,090			16,011
Total number of farms ..... Number	2,457	2,696	2,632	2,299
Area of average farm ..... Acres	102.4	94.0	96.3	99.4
Improved land per farm ..... Acres	74.5	74.7	74.5	76.4
Value of all property per farm ..... Dollars	6,492	5,463	4,543	6,891
Value of land and buildings per farm ..... Dollars	5,895	4,821	3,827	5,683
Value of land and buildings per acre ..... Dollars	57.57	51.29	39.74	57.17

LIVESTOCK: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses ..... Number	7,086	7,088	6,848	6,836	7,366	6,426
Cattle ..... Number	17,661	16,380	15,974	16,931	15,781	14,568
Sheep ..... Number	52,862	74,374	48,373	45,348	34,492	21,791
Hogs ..... Number	22,746	19,361	23,039	20,788	18,417	14,742
Cattle equivalent { Total	32,308	32,869	29,963	30,381	28,438*	24,647
Cattle equivalent { Per 1,000 acres	.....	.....	164	151	145	124

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn ..... Acres	13,785	16,658	22,091	22,514	21,371	22,118
Bushels	372,607	465,832	757,142	722,678	677,235	850,248
Bushels per acre	27.0	28.4	34.2	32.0	31.2	38.5
Oats ..... Acres	12,115	11,616	15,737	15,391	16,306	17,558
Bushels	228,287	318,978	467,351	450,165	480,254	600,018
Bushels per acre	18.8	27.5	29.7	29.3	29.4	34.2
Wheat ..... Acres	24,650	21,245	24,201	31,817	29,385	23,985
Bushels	280,613	251,682	348,152	480,525	419,508	375,364
Bushels per acre	11.4	11.8	14.4	15.1	14.3	15.7
Rye ..... Acres	3,591*	2,182	644	438	637	391
Bushels	27,241*	23,621	6,336	4,939	6,271	4,075
Bushels per acre	7.6*	10.8	9.84	11.2	9.9	10.4
Meadows ..... Acres	18,747	15,480	13,123	18,459	19,753	21,759
Tons	21,495	19,102	14,421	21,368	25,172	26,446
Tons per acre	1.15	1.23	1.10	1.16	1.28	1.21
Clover ..... Acres	.....	7,586	9,474	10,284	7,897	8,931
Tons	.....	5,893	9,349	10,942	9,036	10,183
Tons per acre	.....	.78	.99	1.06	1.14	1.21
Pasture ..... Acres	.....	.....	51,762	74,816	64,878	59,459
Potatoes ..... Acres	.....	735	850	1,030	978	740
Bushels	.....	57,743	67,652	95,072	80,069	74,937
Bushels per acre	.....	78.5	79.5	92.3	81.9	101.2
Orchards ..... Acres	.....	3,896†	4,596	5,270	4,604	3,530
Apples ..... Bushels	.....	154,396†	233,137	244,438	129,012	123,453

*2-year average. †3-year average.

HURON COUNTY

Location.—Huron County is in the north-central part of the State. Bounded on the north by Erie; on the east by Lorain and Ashland; on the south by Ashland, Richland and Crawford, and on the west by Seneca and Sandusky. Area, 494 square miles. Organized in 1815.

Geology.—A small area in the northwest corner of the county is underlaid with the Corniferous limestone. East of this is a belt of Huron shale, 4 to 6 miles wide, reaching across the county, while the remainder of the county lies over the shales and sandstones of the Waverly series. The entire county is covered with glacial drift.

Topography.—The surface is level to gently rolling. The drainage is northward, that of the western part of the county through branches of the Huron River, and that of the eastern part through the Vermillion.

Soils.—The predominant soil type of the county is the Volusia, that in the northeastern quarter being a clay loam, while that in the southern half is more silty. In the northwestern quarter is a considerable area of sandy land due to the ancient beach of the lake, together with areas of the Miami and Clyde soils which are found associated over the limestones in the western half of the State.

Agriculture.—The areas given to corn, oats, wheat and meadows show a tendency towards systematic crop rotation. The yield of corn per acre reached its maximum during the 'seventies, that of oats during the 'eighties, and that of wheat during the last decade. The average yield of corn per acre has been a little below that of the State as a whole and that of wheat considerably above. Clover has occupied a relatively large area.

During the 50 years, 1860-1909, there has been an increase of 45,000 acres, or 50 percent, in the area given to the principal crops, and a decrease of the equivalent of 20,000 cattle, or nearly 50 percent, in the number of livestock.

The average annual expenditure for commercial fertilizers during the three decades has been as below:

Decade	Pounds	Cost
1880-89	.....	$13,973
1890-99	2,436,047	27,318
1900-09	5,007,225	52,198

The amount purchased during the last decade would furnish about 170 pounds for each acre in wheat, if all were applied to that crop. At the Experiment Station wheat that has been grown in rotation with other crops and has received 160 pounds of 14-percent acid phosphate per acre has given an average yield of 18.55 bushels per acre for the 20 years, 1894-1913, but nearly twice this yield is being obtained when manure, fertilizers and powdered limestone, all three, are used to the best advantage.

HURON COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1919
Total	.....	28,532	31,609	31,949	32,330	34,206
White	.....	28,332	31,357	31,760	32,129	33,921
Negro	.....	200	251	186	197	284
Foreign born	.....	3,980	3,824	3,357	2,826	2,895
Rural	.....	.....	.....	.....	22,449	20,096
Urban	.....	.....	.....	.....	9,881	14,110

Population of cities or towns, 1910: Norwalk, 7,858; Bellevue, 5,209; Chicago Junction, 2,950; New London, 1,557; Monroeville, 1,152; Plymouth, 1,314. (Huron and Richland)

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area—Acres	.....	.....	.....	316,160
Land in farms—Acres	302,006	291,607	300,163	290,923
Improved land in farms—Acres	250,305	236,610	237,093	233,779
Woodland in farms—Acres	43,383	54,997	63,070	31,953
Other unimproved land in farms—Acres	8,318			25,191
Total number of farms—Number	3,104	3,152	3,097	2,928
Area of average farm—Acres	97.3	92.5	96.9	99.4
Improved land per farm—Acres	80.6	75.1	76.6	79.8
Value of all property per farm—Dollars	6,133	5,226	4,821	8,280
Value of land and buildings per farm—Dollars	5,526	4,628	4,178	7,169
Value of land and buildings per acre—Dollars	56.79	50.03	43.12	72.12

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Horses—Number	8,252	9,913	9,954	8,723	8,728	7,197
Cattle—Number	24,499	22,416	24,692	20,139	13,557	13,004
Sheep—Number	84,415	125,699	76,414	72,581	58,370	48,709
Hogs—Number	21,397	17,142	16,670	14,724	11,989	11,460
Cattle equivalent—Total	43,332	46,613	43,954	37,593	29,321	26,218
Cattle equivalent—Per 1,000 acres	.....	.....	176	159	124	112

FARM CROPS: Ten-year averages: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Corn—Acres	25,944	24,323	27,918	26,968	27,090	32,113
Corn—Bushels	775,648	731,748	1,026,761	825,736	867,041	1,062,051
Corn—Bushels per acre	29.9	29.3	36.7	30.8	32.0	33.1
Oats—Acres	12,992	13,114	19,486	22,712	25,199	28,902
Oats—Bushels	299,484	392,386	630,543	822,606	811,067	1,023,774
Oats—Bushels per acre	23.0	30.0	32.3	36.2	32.2	35.4
Wheat—Acres	14,451	19,351	23,274	33,897	30,646	29,941
Wheat—Bushels	203,172	268,345	289,304	529,696	510,858	542,097
Wheat—Bushels per acre	14.1	13.8	16.7	15.6	16.7	18.1
Rye—Acre	506*	192	86	241	402	325
Rye—Bushels	4,468	2,196	1,066	3,521	5,011	4,629
Rye—Bushels per acre	.....	11.4	12.32	14.5	12.5	14.3
Meadows—Acres	27,747	31,457	28,091	27,764	33,760	29,674
Meadows—Tons	32,421	40,485	31,291	32,455	40,147	37,334
Meadows—Tons per acre	1.17	1.29	1.11	1.17	1.19	1.26
Clover—Acres	.....	5,191	8,506	10,438	10,346	17,668
Clover—Tons	.....	5,498	9,541	12,421	11,606	22,422
Clover—Tons per acre	.....	1.06	1.12	1.19	1.12	1.27
Pasture—Acres	.....	.....	73,765	81,110	69,100	81,351
Potatoes—Acres	.....	1,416	1,248	1,552	1,740	1,550
Potatoes—Bushels	.....	117,961	114,310	144,406	132,176	133,787
Potatoes—Bushels per acre	.....	83.3	91.6	93.1	75.4	86.3
Orchards—Acres	.....	5,966†	6,461	5,238‡	4,876	3,418
Orchards—Apples—Bushels	.....	206,146	266,100	293,487	122,347	121,400

*2-year average. †3-year average. ‡9-year average.

JACKSON COUNTY

Location.—Jackson County is in the southeastern quarter of the State. Bounded on the north by Ross and Vinton; on the east by Vinton and Gallia; on the south by Gallia, Lawrence and Scioto, and on the west by Scioto, Pike and Ross. Area, 404 square miles. Organized in 1816.

Geology.—The county lies within the lower productive coal measures, and is one of the principal coal producing counties of the State.

Topography.—The surface of the county is very hilly, the only level land being a few narrow creek bottoms. The drainage of the northwestern part of the county is through Salt Creek into the Scioto; that of the northeastern part through Raccoon Creek; that of the southeastern part through Symmes Creek, and that of the southwestern part through the Little Scioto, all flowing into the Ohio.

Soils.—The predominant soil type is the Dekalb silt loam. The soils in the creek valleys are classed as Holston silt loam or Tyler silt loam, names given to level or rolling terrace soils derived from the wash of adjoining sandstone hills, the Holston being better drained than the Tyler.

Agriculture.—But a small part of the county is sufficiently level for tillage, and the tendency has wisely been toward a reduction in the area under the plow, the area in the grain crops being 16,000 acres, or 40 percent, less during the last decade than during the 'sixties.

This reduction has been partly due to the development of the mining industry during this period, mining having offered more profitable employment than the production of the ordinary farm crops on the steep hillsides of the county.

Much of the land in many of the hilly counties of southeastern Ohio is better adapted to forestry than to any other industry and should be taken over by the State and devoted to that purpose. Forestry is not an industry that can be adapted to small holdings, but it is one of great importance to the State as a whole.

The orchards of the county were a valuable asset during the 'eighties, and work recently done in the county under direction of the Experiment Station has shown the possibility of recovering this industry and expanding it on a profitable basis.

The miners' dogs are a serious impediment to sheep husbandry, which is the branch of animal industry to which hill lands are generally best adapted.

JACKSON COUNTY STATISTICS

POPULATION; U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	21,759	23,686	28,408	34,248	30,791
White	.....	20,970	22,774	27,669	33,489	30,081
Negro	.....	789	912	738	756	708
Foreign born	.....	1,794	1,394	1,450	1,146	631
Rural	.....	.....	.....	.....	21,530	18,448
Urban	.....	.....	.....	.....	12,717	12,343

Population of cities or towns, 1910: Jackson, 5,468; Oak hill, 1,148; Coalton, 1,111; Wellston, 6,875.

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area....Acres..	.....	.....	.....	258,560
Land in farms....Acres..	237,816	228,705	234,173	237,014
Improved land in farms....Acres..	169 886	170,084	184,057	172,118
Woodland in farms....Acres..	59,836	58,621	50,116	40,944
Other unimproved land in farms....Acres..	8,094			23,952
Total number of farms....Number..	1,951	1,905	2,078	2,178
Area of average farm....Acres..	121.9	120.1	112.7	108.8
Improved land per farm....Acres..	87.1	89.3	88.6	79.0
Value of all property per farm....Dollars..	2,777	2,258	2,164	2,627
Value of land and buildings per farm....Dollars..	2,444	1,912	1,920	2,153
Value of land and buildings per acre....Dollars..	18.41		17.04	19.86

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses....Number..	3,644	4,573	4,572	3,772	3,711	2,592
Cattle....Number..	12,104	14,590	14,597	15,030	10,716	9,504
Sheep....Number..	16,235	24,628	12,657	13,134	13,166	5,149
Hogs....Number..	15,365	14,385	11,862	7,692	4,558	3,233
Cattle equivalent {Total	18,908	23,064	21,621	20,885	16,199	12,934
Cattle equivalent {Per 1,000 acres	.....	.....	127	123	88	75

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn....Acres..	17,468	16,823	19,292	13,857	14,422	13,0 2
Bushels..	417,908	400,074	481,616	306,042	314.803	296,6 2
Bushels per acre..	23.8	23,0	24.9	22.0	21.8	22.85
Oats....Acres..	.....	5,813	7,978	3,514	1,505	1,299
Bushels..	.....	84,630	159,343	47,614	19,424	20,421
Bushels per acre..	.....	14.6	19.9	13.5	12.8	15.7
Wheat....Acres..	13,521	15,392	9,751	9,980	11,588	7,526
Bushels..	114,595	105,435	62,334	85,816	124,522	71,230
Bushels per acre..	8.5	6.8	6.4	8.6	10.7	9.5
Rye....Acres..	.....	154	117	95	32	92
Bushels..	.....	1,074	639	603	297	662
Bushels per acre..	.....	6.8	5.5	6.3	9.3	7.2
Meadows....Acres..	7,809	10,469	13,459	17,946	18,030	17,586
Tons..	8,626	10,184	10,894	14,797	12,655	12,686
Tons per acre..	1.10	.97	.81	.83	.70	.72
Clover....Acres..	.....	795	535	160	359	205
Tons..	.....	112	144	97	239	182
Tons per acre..	.....	.14	.27	.61	.67	.88
Pasture....Acres..	.....	.....	75,617	104,468	100,827	110,877
Potatoes....Acres..	.....	424	575	477	355	266
Bushels..	.....	29,071	37,533	27,403	21,340	18,067
Bushels per acre..	.....	68.5	65.3	57.0	60.1	67.9
Orchards....Acres..	.....	2,675*	3,363	3,606	3,341	2,502
Apples....Bushels..	.....	88,848	97,451	104,238	71,947	27,784

*3-year average.

JEFFERSON COUNTY

Location.—Jefferson County is in middle-eastern Ohio, on the Ohio River. Bounded on the north by Columbiana; on the east by the Ohio River and Hancock and Brooke Counties, West Virginia; on the south by Belmont, and on the west by Harrison and Carroll. Area, 407 square miles. Organized in 1797.

Geology.—The surface rocks of the county are chiefly those of the lower barren coal measures, but some of the hills are capped with those of the lower productive coal measures, giving occasional outcrops of limestone. The county lies south of the limit of glaciation.

Topography.—The county is very hilly, there being no level land except the narrow flood plain of the Ohio. In parts of the county, however, the hills are so rounded as to give a plateau-like contour that makes tillage possible. The drainage is eastward through small creeks into the Ohio River, the principal of which are Yellow Creek, Island Creek, Wells Creek, Cross Creek, Salt River, Rush River and Short Creek.

Soils.—The soils over the major part of the county are classed in the Westmoreland series—the alternations of Dekalb silt loam and Brooke clay loam which are found in the productive coal measures—the Dekalb soils being formed by the decomposition of sandstones and shales, and the Brooke soil originating from limestones.

Agriculture.—In common with most of the hill counties, Jefferson shows a marked reduction in the area given to the cereal crops and an increase in that given to hay crops, the area in the cereals having been larger by 18,500 acres during the 'fifties than during the last decade, and that in meadows smaller by 14,000 acres.

Notwithstanding the increase in the total hay yield—for the falling off in yield per acre has been much more than offset by the increased acreage—the livestock of the county has diminished since the 'eighties by the equivalent of more than 12,000 cattle, while the annual expenditure for commercial fertilizers has amounted to $12,000 annually during the last 20 years.

The peak of production, as measured by the yield per acre, is shown for the corn crop during the 'seventies, for oats during the 'eighties, for wheat during the 'nineties and for hay during the 'fifties and 'sixties.

It does not seem, therefore, that the substitution of one dollar's worth of chemical fertilizers for the manure that would be produced in a year by one head of cattle is maintaining the crop yields.

JEFFERSON COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total		29,188	33,018	39,415	44,357	65,423
White		28,183	31,835	38,228	42,782	63,767
Negro		1,005	1,183	1,184	1,569	1,647
Foreign born		3,245	2,847	3,993	5,244	14,672
Rural					23,528	34,712
Urban					20 829	30 711

Population of cities or towns, 1910: Steubenville, 22,391; Toronto. 4,271; Mingo Junction, 4,049; Dillonvale, 1,519; Amsterdam, 1,041; Bergholz, 1,011.

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area, Acres				260,480
Land in farms, Acres	242,785	236,850	246,989	229,405
Improved land in farms, Acres	172,392	176,972	173,347	158,350
Woodland in farms, Acres	64,831	} 59,878	73,642	{ 46,563
Other unimproved land in farms, Acres	5,562	}		{ 24,492
Total number of farms, Number	1,927	1,878	2,011	1,984
Area of average farm, Acres	126.0	126.1	122.8	115.6
Improved land per farm, Acres	89.5	94 2	86.2	79.8
Value of all property per farm, Dollars	6,777	6,199	4,615	5,789
Value of land and buildings per farm, Dollars	6,043	5,344	3,967	4,972
Value of land and buildings per acre, Dollars	47.96	42.48	32.30	43.01

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Horses, Number	6,470	6,390	5,994	6,365	6,662	4,124
Cattle, Number	12,239	11,947	12,505	13,316	12,231	10,516
Sheep, Number	93,833	158,394	135,531	116,023	70,656	45,990
Hogs, Number	15,928	11,291	10,020	9,334	7,668	4,926
Cattle equivalent { Total	30,695	35,306	33,154	32,218	26,725	19,732
Cattle equivalent { Per 1,000 acres			192	182	154	125

FARM CROPS: Ten-year averages: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Corn, Acres	13,913	13,101	15,079	14,348	14,497	11,157
Corn, Bushels	447,239	439,249	604,356	563,646	500,364	415,067
Corn, Bushels per acre	32.1	33.4	40.0	38.7	34.5	37.2
Oats, Acres	11,017	10,662	10,584	10,024	10,836	10,253
Oats, Bushels	222,677	299,424	277,959	313,312	283,536	302,382
Oats, Bushels per acre	20.3	28.1	26.2	31.2	26.2	29.5
Wheat, Acres	23,575	13,804	15,044	17,269	15,032	10,746
Wheat, Bushels	264,348	151,337	185,170	255,754	236,245	156,756
Wheat, Bushels per acre	11.2	10.9	12.3	14.8	15.7	14.6
Rye, Acres	2,258*	1,320	393	194	148	101
Rye, Bushels	14,297	13,129	3,846	1,978	1,335	1,053
Rye, Bushels per acre	6.3	9.9	9.8	10.1	9.0	10.4
Meadows, Acres	16,095	18,468	22,706	25,190	27,253	30,676
Meadows, Tons	19,710	22,287	25,154	27,793	29,086	31,715
Meadows, Tons per acre	1.22	1.21	1.11	1.10	1.07	1.03
Clover, Acres		2,819	1,536	2,608	2,785	2,444
Clover, Tons		2,892	1,390	2,921	3,436	2,942
Clover, Tons per acre		1.03	.90	1.12	1.23	1.20
Pasture, Acres			78,487	87 585	90 103	87.523
Potatoes, Acres		769	675	943	1,052	752
Potatoes, Bushels		58,207	55,669	88,402	83,203	73,277
Potatoes, Bushels per acre		75.7	82 5	93.8	79.1	97.5
Orchards, Acres		4,007†	4,079	4,424	4,325	3,730
Apples, Bushels		84,757	177,841	187,030	93 050	77,232

*2-year average. †3-year average.

KNOX COUNTY

Location.—Knox County is in the central part of the State. Bounded on the north by Morrow, Richland, Ashland and Holmes; on the east by Holmes and Coshocton; on the south by Licking, and on the west by Delaware and Morrow. Area, 513 square miles. Organized in 1808.

Geology.—The floor of the larger part of the county consists of the upper shales and sandstones of the Waverly, which are capped in the extreme eastern part with the lower rocks of the coal measures. The entire county is covered with drift, which in places has filled the channels of pre-glacial rivers, several of which have been found in the county, to a depth of 200 feet or more. In other places the drift is thin, and is materially modified by the underlying rocks.

Topography.—The Mohican River crosses the northeastern corner of the county through a narrow valley with hills rising on either side to the height of 350 to 400 feet. Over the remainder of the county the softer Waverly rocks give rise to more rounded contours and much of the country is rolling, rather than hilly. Owl Creek, flowing southeast from the northwestern corner of the county and uniting with other streams to form the Kokosing, which flows eastwardly into the Walhonding, and headwaters of the Licking River in the southern part of the county, are the principal drainage channels.

Soils.—Nearly half the total area of the county, in a belt extending from northwest to southeast, is classed as Wooster silt loam; the northeastern quarter and east side as Dekalb, and the southwestern quarter as Volusia silt loam and clay loam. In Owl Creek and Kokosing Valleys, especially near Mt. Vernon, are considerable areas of bottom and river terrace land.

Agriculture.—Corn is the principal crop of the county, occupying annually a little more than 30,000 acres. Wheat exceeded corn in area during the 'eighties and 'nineties, but dropped to 26,000 acres during the last decade, the meadows and pastures, apparently, being the gainers by this change. The acre-yields reached their maximum in the 'seventies for corn and in the last decade for oats, wheat and hay, but the rate of yield is not high for any crop. The livestock of the county, however, has diminished by the equivalent of 11,000 cattle since the 'seventies. Knox has been and still is one of the principal sheep keeping counties of the State, but the sheep flocks have fallen in number by 61,000, or more than 40 percent, since the 'eighties.

The annual expenditure for commercial fertilizers averaged $5,506 for the 'eighties, $17,356 for the 'nineties and $25,741 for the last decade.

KNOX COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total		26,333	27,431	27,600	27,768	30,181
White		26,144	27,128	27,291	27,482	29,857
Negro		184	302	307	285	323
Foreign born		1,244	1,153	943	724	983
Rural					21,135	21,094
Urban					6,633	9,087

Population of cities or towns, 1910: Mt. Vernon, 9,087; Fredericktown, 1,021.

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area—Acres				328,320
Land in farms—Acres	333,899	314,297	326,049	324,716
Improved land in farms—Acres	261,853	257,981	267,660	269,353
Woodland in farms—Acres	70,286	56,316	58,389	41,955
Other unimproved land in farms—Acres	1,760			13,408
Total number of farms—Number	3,419	3,207	3,425	3,272
Area of average farm—Acres	97.7	98.0	95.2	99.2
Improved land per farm—Acres	76.6	80.4	78.1	82.3
Value of all property per farm—Dollars	5,696	5,041	3,952	7,028
Value of land and buildings per farm—Dollars	5,108	4,390	3,333	5,967
Value of land and buildings per acre—Dollars	52.28	44.80	35.01	60.15

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses—Number	9,214	9,935	9,755	9,317	9,059	6,188
Cattle—Number	19,869	18,969	19,903	18,949	16,316	17,412
Sheep—Number	94,779	146,149	136,185	146,247	103,991	85,246
Hogs—Number	28,876	24,740	26,200	22,211	18,279	18,734
Cattle equivalent—Total	41,449	45,992	45,897	45,112	37,602	33,998
Cattle equivalent—Per 1,000 acres			175	175	140	126

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn—Acres	26,971	30,281	35,731	32,442	32,228	31,824
Bushels	880,351	952,402	1,334,203	1,105,015	1,065,414	1,092,918
Bushels per acre	32.7	31.3	37.2	33.4	33.0	34.4
Oats—Acres	10,529	10,452	12,911	10,525	11,852	10,839
Bushels	189,933	277,701	355,942	311,611	334,566	321,880
Bushels per acre	18.9	26.6	27.6	29.6	28.2	29.7
Wheat—Acres	22,840	19,864	24,826	35,131	36,210	26,137
Bushels	259,698	218,060	313,819	441,766	488,006	375,161
Bushels per acre	11.4	11.0	12.6	12.6	13.5	14.3
Rye—Acres	3,334	2,732	763	442	743	824
Bushels	24,391	26,787	7,654	3,765	5,793	7,976
Bushels per acre	7.3	9.8	10.04	8.5	7.8	9.7
Meadows—Acres	18,550	22,304	22,016	26,527	29,459	34,250
Tons	20,050	26,788	24,382	30,613	33,053	44,770
Tons per acre	1.08	1.20	1.10	1.15	1.12	1.31
Clover—Acres		6,333	6,326	8,125	9,564	6,763
Tons		4,296	5,646	9,038	11,178	8,612
Tons per acre		.69	.89	1.11	1.17	1.28
Pasture—Acres			115,748	120,119	124,964	112,566
Potatoes—Acres		855	1,110	1,092	960	574
Bushels		72,702	83,018	85,974	70,600	47,242
Bushels per acre		85.0	74.8	84.2	73.9	82.2
Orchards—Acres		4,492†	5,499	5,455	4,308	2,999
Apples—Bushels		187,997	211,347	149,498	74,492	54,274

*2-year average. †3-year average.

LAKE COUNTY

Location.—Lake County is in the northeastern quarter of the State. Bounded on the north by Lake Erie; on the east by Ashtabula; on the south by Geauga, and on the west by Cuyahoga. Area, 241 square miles—the smallest county in the State. Organized in 1840.

Geology.—The surface rocks are the lower sandstones and shales of the Waverly, beginning with the Cuyahoga shale, which underlies the conglomerate and forms the floor of the southern part of the county, and extending over the Berea grit and the Bedford, Cleveland and Erie shales, but all covered with drift.

Topography.—The southern part of the county is 500 to 600 feet higher than the Lake, towards which there is a gradual descent, averaging about 58 feet to the mile. Several ridges of sand mark ancient beaches of the lake, which once extended to the rocky front shown by Geauga County. The rapid slope toward the lake has caused the cutting by the streams of deep channels. The principal drainage is through the Chagrin River, which crosses the western end of the county, and Grand River, which crosses the middle.

Soils.—The higher and rolling land of the southern part of the county is classed as Volusia, while the more level part nearer the lake is generally sandy with areas of clay and marsh land.

Agriculture.—During the 'eighties corn, oats and wheat occupied nearly equal areas, and more than twice as much land was given to hay crops as to either of the cereals. Since then the area in oats has been increased at the expense of the wheat crop. Clover is a very minor and a diminishing crop. The maximum acre yield of corn was reached during the 'seventies, since when there has been a material reduction. That in oats was reached during the 'eighties, and that in wheat during the 'nineties.

The livestock of the county has diminished by more than one-third since the 'sixties, and the expenditure for commercial fertilizers has risen to an average of nearly $20,000 annually during the last decade, or to more than one dollar for each acre in cereal crops.

The Volusia soils are generally in need of both draining and liming, and until these are done manuring and fertilizing fail of their full effect. Land on which clover cannot be grown successfully cannot compete with soils adapted to that crop, and clover cannot be grown successfully on a large part of the Volusia soils of Ohio until they are limed.

LAKE COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	15,935	16,326	18,235	21,680	22,927
White	.....	15,835	16,174	18,013	21,422	22,685
Negro	.....	100	152	219	249	237
Foreign born	....	1,672	1,609	2,284	3,143	3,573
Rural	....	.....	.....	.....	16,656	17,426
Urban	.....	.....	.....	.....	5,024	5,501

Population of cities or towns, 1910: Painesville, 5,501; Fairport, 2,263; Willoughby, 2,072.

FARMS: U. S. Census

Farms: U. S. census	1880	1890	1900	1910
Approximate land area....Acres..	.....	.....	.....	154,240
Land in farms....Acres..	142,288	128,708	132,214	130,748
Improved land in farms....Acres..	113,552	102,797	94 812	92,300
Woodland in farms....Acres..	23,618	25,911	37 402	23,170
Other unimproved land in farms....Acres..	5,118			15,279
Total number of farms ..Number..	1,581	1,712	1,902	1,945
Area of average farm....Acres..	80.0	75.2	69.5	67.2
Improved land per farm....Acres.	71.8	60.0	49.8	47.5
Value of all property per farm..Dollars..	5,470	5,410	5,517	8,875
Value of land and buildings per farm....Dollars..	5,018	4,898	5,037	8,162
Value of land and buildings per acre....Dollars..	62.72	28.61	72.47	121.46

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses....Number..	3,619	4,356	4,109	4,049	4,456	4,680
Cattle....Number..	12,868	10,131	10,811	8,863	6,298	6,901
Sheep....Number..	30,098	41,448	18,673	20,897	11,031	4,248
Hogs....Number..	3,470	3,111	2,553	1,966	1,594	1,495
Cattle equivalent Total	19,839	18,942	17,043	15,208	12,017	12,155
Cattle equivalent Per 1,000 acres	.....	.....	150	148	127	132

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn....Acres..	7,167	5,492	6,009	6,295	6,095	6,676
Bushels..	253,505	207,693	248,776	198,569	198,086	192,340
Bushels per acre..	35.0	37.9	41.4	31.5	32.4	28.8
Oats....Acres..	2,610	3,432	6,186	6,554	7,111	8,645
Bushels..	64,217	104,878	205,411	225,675	236,668	286,422
Bushels per acre.	24.6	30.6	33.2	34.4	33.3	33.1
Wheat....Acres..	4,666	4,354	4,475	6,497	5,659	3,284
Bushels..	63,111	61,720	69,675	100,775	91,208	48,002
Bushels per acre..	13.5	14.2	15.6	15.3	16.1	14.6
Rye....Acres..	558*	178	252	575	787	795
Bushels..	6,587	2,152	3,494	10,137	1,097	12,148
Bushels per acre..	11.8	12.1	13.9	17.6	14.0	15.3
Meadows....Acres..	16,631	15,563	14,300	14,131	12,873	13,337
Tons..	20,543	18,753	16,741	18,005	15,434	16,318
Tons per acre..	1.24	1.20	1.17	1.27	1.21	1.22
Clover....Acres..	.....	1,034	1,113	1,949	664	577
Tons..	.....	1,496	1,463	2,678	956	808
Tons per acre..	.....	1.38	1.32	1.37	1.44	1.39
Pasture....Acres..	.....	....	34,882	39,338	31,390	30 083
Potatoes....Acres..	.....	3,245	2,810	1,420	1,703	1,997
Bushels..	.....	348,747	256,333	108,788	158,916	164,804
Bushels per acre..	.....	93.1	91.2	76.4	93.3	82.5
Orchards....Acres..	.....	2,499†	2,797	3,066	2,574	2,484
Apples....Bushels..	.....	83,063	133,480	140,674	80,661	106,014

*2-year average. †3-year average.

LAWRENCE COUNTY

Location.—Lawrence County is at the southern extremity of the State. Bounded on the north by Scioto, Jackson and Gallia; on the east by Gallia, the Ohio River and Cabell County, West Virginia; on the south by the Ohio River and Wayne County, West Virginia, and Boyd and Greenup Counties, Kentucky, and on the west by the Ohio River, Greenup County, Kentucky, and Scioto County, Ohio. Area, 443 square miles. Organized in 1816.

Geology.—The surface rocks of Lawrence County include the entire range of the coal measures from the lower productive on the west through the barren to the upper productive on the east. In addition to the coal, the county has large deposits of iron ore, which were considered very valuable until the better ores of Duluth and Missouri displaced them.

Topography.—The county is very hilly, there being no level land excepting the narrow flood plain of the Ohio River, and a few still narrower creek valleys. The hills in the western part of the county are very steep and rugged and are largely covered with forest. The drainage is through the Ohio River and small streams flowing into it, the largest of which is Symmes Creek, flowing to the south through the eastern part of the county.

Soils.—The soils are the Dekalb and closely related Meigs soils on the hills and the Holston and Tyler silt loams on the terraces and flood plains of the river and creeks.

Agriculture.—Corn is the principal crop, occupying a larger area than the small grains and hay crops combined. The yield per acre has fallen from 25.8 bushels during the 'fifties to 22.2 bushels for the last decade. The corn is grown chiefly in the valleys, and to a large extent is grown year after year on the same land. Wheat, like corn, gave its maximum yield of 10.6 bushels per acre during the 'fifties, while oats reached its maximum of 16.6 bushels during the 'seventies.

The livestock of the county has diminished by 50 percent since the 'seventies, and the expenditure for commercial fertilizers reached an average of $2,919 during the last decade, paid for 161 tons.

The yield of apples shows a falling off of 50 percent in total production since the 'eighties, but the experience of a large orchardist in the county has shown that apples may be produced there as successfully today as at any time in the past.

The natural crop of the more rugged hills of the county is forest trees, which have shown a rapid second growth after having been cut off by the charcoal burners when that fuel was used for smelting, and the State has made a beginning in the reforesting of this region which should be largely extended.

LAWRENCE COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	31,380	39,068	39,556	39,534	39,488
White	.....	30,120	37,319	37,795	37,881	37,696
Negro	.....	1,241	1,746	1,758	1,651	1,789
Foreign born	.....	2,582	2,386	1,724	1,047	693
Rural	.....	.....	.....	.....	27,666	26,341
Urban	.....	.....	.....	.....	11,868	13,147

Population of cities or towns, 1910: Ironton, 13,147; Coal Grove, 1,759.

FARMS: U. S. Census

Farms; U. S. Census	1880	1890	1900	1910
Approximate land area, Acres	.....	.....	.....	283,520
Land in farms, Acres	234,980	189,795	209,915	205,345
Improved land in farms, Acres	117,300	124,010	142,835	133,733
Woodland in farms, Acres	103,233	65,785	67,080	44,132
Other unimproved land in farms, Acres	14,447			27,480
Total number of farms, Number	1,947	2,032	2,945	2,940
Area of average farm, Acres	120.7	93.4	71.3	69.8
Improved land per farm, Acres	60.3	61.0	48.5	45.5
Value of all property per farm, Dollars	2,484	2,140	1,669	1,994
Value of land and buildings per farm, Dollars	2,199	1,821	1,385	1,657
Value of land and buildings per acre, Dollars	18.22	19.50	19.43	23.74

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses, Number	2,605	3,688	4,538	4,090	3,816	2,371
Cattle, Number	9,072	12,218	13,150	11,723	9,008	7,141
Sheep, Number	6,762	12,137	7,047	6,547	4,590	1,479
Hogs, Number	14,642	15,867	14,528	9,219	5,607	2,997
Cattle equivalent, Total	13,817	18,706	19,846	17,390	13,844	9,960
Cattle equivalent, Per 1,000 acres	.....	.....	169	140	97	74

FARM CROPS: Ten-year average production: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn, Acres	18,287	17,553	19,880	17,792	16,918	15,123
Corn, Bushels	472,431	444,976	504,183	390,620	389,098	334,957
Corn, Bushels per acre	25.8	25.1	25.4	22.0	23.0	22.2
Oats, Acres	3,407	3,913	5,168	4,365	3,363	3,686
Oats, Bushels	37,161	60,120	86,110	56,050	35,416	46,724
Oats, Bushels per acre	10.9	15.4	16.6	12.9	10.5	12.7
Wheat, Acres	5,958	11,451	11,611	14,228	10,532	4,392
Wheat, Bushels	63,009	103,171	91,738	106,237	86,670	38,408
Wheat, Bushels per acre	10.6	9.0	7.9	7.5	8.2	8.7
Rye, Acres	475	127	70	121	126	58
Rye, Bushels	470	1,197	596	594	452	242
Rye, Bushels per acre	9.9	9.4	8.5	4.8	3.6	4.2
Meadows, Acres	2,824	3,785	5,082	7,874	6,882	6,219
Meadows, Tons	3,649	3,947	4,350	5,891	5,177	5,662
Meadows, Tons per acre	1.29	1.05	.86	.75	.76	.91
Clover, Acres	.....	2,600	2,926	2,442	1,738	798
Clover, Tons	.....	441	421	696	688	492
Clover, Tons per acre	.....	.17	.14	.29	.40	.61
Pasture, Acres	.....	.....	22,287	37,405	49,530	53,067
Potatoes, Acres	.....	530	607	623	451	458
Potatoes, Bushels	.....	32,830	34,164	37,122	27,936	38,813
Potatoes, Bushels per acre	.....	61.9	56.2	59.4	60.9	84.8
Orchards, Acres	.....	3,701	4,190	5,018	5,192	5,354
Apples, Bushels	.....	83,835	123,075	146,021	72,803	73,705

LICKING COUNTY

Location.—Licking County is near the center of the State. Bounded on the north by Knox; on the east by Coshocton and Muskingum; on the south by Perry and Fairfield, and on the west by Franklin and Delaware. Area, 669 square miles. Organized in 1808.

Geology.—The shales and sandstones of the Waverly are the surface rocks over the larger part of the county, these being overlaid with the lower productive coal measures in the eastern part of the county. The entire county is covered with glacial drift excepting a small area at the eastern end.

Topography.—The western two-thirds of the county is rolling. The eastern third is more hilly. The North Fork, flowing south near the middle of the county, and Raccoon Creek, coming from the northeast, unite at Newark to form the Licking River, which flows eastwardly and southeastwardly until it reaches the Muskingum at Zanesville. Buckeye Lake, a large canal reservoir, lies at the junction of Licking, Fairfield and Perry Counties.

Soils.—The predominant soil type of the western part of the county is classed as Volusia silt loam, while that of the eastern part is classed as Dekalb silt loam. There are a few small areas of flat black land in the western and southern parts of the county classed as Clyde clay, the largest being in the vicinity of Buckeye Lake.

Agriculture.—Corn occupies nearly as large an area as all the small grains combined. Both total area and yield per acre reached the highest point during the 'seventies, but have declined since, closing the sixth decade at almost the same figures as those found for the first.

Wheat reached its maximum area during the 'eighties and its greatest yield during the 'nineties, but during the last decade the area has been smaller and the yield less than 1 bushel per acre greater than during the 'fifties, notwithstanding the fact that during the last decade there was an annual expenditure of $34,470 for commercial fertilizers. The statistics, however, show that during this decade there was less livestock in the county by the equivalent of more than 16,000 cattle than during the 30 years, 1860 to 1889.

LICKING COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	35,756	40,450	43,279	47,070	55,590
White	.....	35,513	40,077	42,820	46,665	55,150
Negro	.....	243	370	457	399	432
Foreign born	.....	2,434	2,159	1,944	1,794	2,661
Rural	.....	.....	.....	.....	28,913	30,186
Urban	.....	.....	.....	.....	18,157	25,404

Population of cities or towns, 1910: Newark, 25,404; Utica, 1,729; Granville, 1,394.

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area, Acres	.....	.....	.....	428,160
Land in farms, Acres	458,324	405,269	417,030	414,806
Improved land in farms, Acres	373,896	339,796	353,412	357,929
Woodland in farms, Acres	79,709	65,473	63,618	43,630
Other unimproved land in farms, Acres	4,719			13,247
Total number of farms, Number	4,003	3,889	4,458	4,307
Area of average farm, Acres	114.5	104.2	93.5	96.3
Improved land per farm, Acres	93.4	87.4	79.3	83.1
Value of all property per farm, Dollars	5,929	4,602	4,144	6,648
Value of land and buildings per farm, Dollars	5,180	3,892	3,509	5,679
Value of land and buildings per acre, Dollars	45.24	37.35	37.53	58.97

LIVESTOCK. Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-00
Horses, Number	11,454	12,635	12,383	12,248	13,245	10,056
Cattle, Number	30,122	25,666	25,838	25,897	24,078	24,931
Sheep, Number	146,500	240,309	223,274	220,187	121,557	88,360
Hogs, Number	38,690	31,536	31,418	26,088	26,224	25,430
Cattle equivalent, Total	60,095	65,486	63,690	62,773	52,101	46,366
Cattle equivalent, Per 1,000 acres	.....	.....	170	185	147	130

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn, Acres	43,302	43,878	50,925	46,358	49,525	43,667
Corn, Bushels	1,510,284	1,514,041	2,018,223	1,532,115	1,758,833	1,712,512
Corn, Bushels per acre	34.9	34.5	39.6	33.0	35.5	35.2
Oats, Acres	15,636	10,694	11,439	8,785	11,924	11,954
Oats, Bushels	190,382	280,017	276,143	238,770	316,814	324,023
Oats, Bushels per acre	12.1	26.2	24.1	27.2	26.6	27.1
Wheat, Acres	32,321	22,078	58,207	41,904	38,939	29,119
Wheat, Bushels	352,658	224,550	357,535	516,182	526,945	343,566
Wheat, Bushels per acre	10.9	10.2	12.7	12.8	13.5	11.8
Rye, Acres	2,149	3,322	1,088	6,672	1,321	2,025
Rye, Bushels	14,948	32,994	10,785	66,947	11,731	21,993
Rye, Bushels per acre	6.9	9.9	9.9	10.0	8.9	10.9
Meadows, Acres	26,261	30,990	31,030	39,204	48,536	56,713
Meadows, Tons	39,343	37,975	34,214	46,317	54,967	64,302
Meadows, Tons per acre	1.50	1.21	1.10	1.18	1.13	1.13
Clover, Acres	.....	2,213	3,414	7,308	7,789	8,364
Clover, Tons	.....	1,960	2,917	8,528	8,095	10,054
Clover, Tons per acre	.....	.89	.85	1.17	1.04	1.20
Pasture, Acres	.....	.....	141,377	173,196	176,289	192,780
Potatoes, Acres	.....	1,110	1,541	1,704	1,634	1,301
Potatoes, Bushels	.....	92,882	119,972	126,660	116,999	123,573
Potatoes, Bushels per acre	.....	83.7	77.8	74.3	71.6	95.0
Orchards, Acres	.....	3,015*	6,603	5,678†	6,086	4,854
Apples, Bushels	.....	237,755	244,591	228,010	113,342	103,710

*3-year average. †9-year average.

LOGAN COUNTY

Location.—Logan County is in the west central part of the State. Bounded on the north by Auglaize and Hardin; on the east by Union; on the south by Champaign and on the west by Shelby and Auglaize. Area, 451 square miles. Organized in 1817.

Geology.—The surface rocks over the greater part of the county are limestones belonging to the Waterlime group, with Niagara limestones in the western part, but near the center of the county the land rises to one of the highest elevations in the State—1,540 feet—on which occur outcrops of the Olentangy and Ohio shales, which have escaped the denuding agencies that have elsewhere removed these formations. Over the remainder of the county the surface is covered with the detritus of the glacial drift.

Topography.—The general topography of the county is rolling to hilly with a fringe of level land around the west, north and east sides. The drainage is toward the south, the eastern part of the county draining through the upper waters of Mad River, and the western part through those of the Great Miami.

Soils.—The soil of the interior of the county is the Miami silt loam intermingled with areas of the more gravely Bellefontaine silt loam. The more level land of the east, north and west borders is classed as chiefly Miami clay loam, with considerable areas of the black Clyde clay loam, the largest of which is in the northwestern corner adjoining Indian Lake or Lewistown Reservoir, a feeder of the Miami Canal.

Agriculture.—Corn is the principal crop, and has steadily increased in area during the period under review. The yield per acre has been practically the average yield of the State. Wheat reached an area greater than that of corn during the 'eighties, but has since fallen to less than half that of corn, there being a considerable shifting from wheat to oats and corn during the last decade. In yield per acre wheat has fallen off during recent years, the yield for the last decade being smaller than for any other similar period, notwithstanding an annual expenditure of $14,363 during this period for commercial fertilizers.

In Logan, as in most of the other counties of the State, there has been a large reduction of livestock during the last 30 years, and the fertilizers purchased have been far from sufficient to return to the land the elements of fertility carried off in the produce shipped out of the county.

LOGAN COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	23,028	26,267	27,386	30,420	30,084
White	.....	23,066	25,210	26,390	29,472	29,306
Negro	.....	962	1,057	996	947	777
Foreign born	.....	966	825	673	523	356
Rural	.....	.....	.....	.....	23,771	21,846
Urban	.....	.....	.....	.....	6,649	8,238

Population of cities or towns, 1910: Bellefontaine, 8,238; West Liberty, 1,288; De Graffe, 1,082.

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area, Acres	.....	.....	.....	288,640
Land in farms, Acres	269,472	262,159	289,777	278,978
Improved land in farms, Acres	186,318	201,301	226,557	226,389
Woodland in farms, Acres	79,298	60,858	63,220	37,245
Other unimproved land in farms, Acres	3,856			15,344
Total number of farms, Number	2,500	2,605	3,172	2,886
Area of average farm, Acres	107.8	100.6	91.4	96.7
Improved land per farm, Acres	74.5	77.2	71.4	78.4
Value of all property per farm, Dollars	5,755	4,987	4,065	7,849
Value of land and buildings per farm, Dollars	5,034	4,314	3,414	6,713
Value of land and buildings per acre, Dollars	46.70	42.88	37.35	69.42

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses, Number	7,287	8,591	8,959	9,571	9,433	7,818
Cattle, Number	17,884	17,797	18,933	18,679	14,744	15,948
Sheep, Number	33,615	56,124	50,662	70,548	43,740	28,491
Hogs, Number	23,567	25,724	30,532	24,778	21,174	24,630
Cattle equivalent, Total	30,889	34,573	36,011	37,783	30,668	29,070
Cattle equivalent, Per 1,000 acres	.....	.....	193	188	135	128

FARM CROPS: 10-year averages: Ohio statistics

	1850-59	1860-69*	1870-79	1880-89	1890-99	1900-09
Corn, Acres	24,932	29,992	36,214	37,737	41,047	49,497
Corn, Bushels	79,368	866,033	1,318,156	1,354,929	1,401,530	1,904,051
Corn, Bushels per acre	31.8	28.9	36.8	35.9	34.1	38.4
Oats, Acres	6,717	5,867	7,298	5,090	8,780	20,223
Oats, Bushels	124,781	151,116	181,871	151,783	232,173	659,769
Oats, Bushels per acre	18.5	25.8	24.9	29.8	26.4	32.6
Wheat, Acres	22,142	24,698	29,808	40,052	33,976	23,316
Wheat, Bushels	288,770	323,754	420,619	561,501	467,385	289,842
Wheat, Bushels per acre	13.0	13.1	14.1	14.0	13.8	12.4
Rye, Acres	650	463	200	1,407	620	1,565
Rye, Bushels	5,376	5,204	2,497	18,215	6,196	19,041
Rye, Bushels per acre	8.2	11.2	12.5	12.9	10.0	12.2
Meadows, Acres	14,008	13,956	14,349	15,242	19,012	16,444
Meadows, Tons	16,475	17,780	15,987	18,264	22,625	24,323
Meadows, Tons per acre	1.17	1.27	1.12	1.20	1.19	1.13
Clover, Acres	.....	4,649	7,299	8,034	9,532	16,330
Clover, Tons	.....	4,381	5,539	8,510	12,398	14,336
Clover, Tons per acre	.....	.94	.76	1.06	1.30	.88
Pasture, Acres	.....	.....	49,187	48,196	43,993	67,252
Potatoes, Acres	.....	611	742	820	826	543
Potatoes, Bushels	.....	38,614	51,073	69,691	50,461	42,217
Potatoes, Bushels per acre	.....	63.2	68.3	88.1	61.5	87.7
Orchards, Acres	.....	3,015*	3,685	2,867	2,528	1,828
Apples, Bushels	.....	137,308	176,138	111,936	47,873	35,149

*2-year average. †9-year average.

LORAIN COUNTY

Location.—Lorain County is in northern Ohio. Bounded on the north by Lake Erie; on the east by Cuyahoga and Medina Counties; on the south by Medina and Ashland, and on the west by Huron and Erie. Area, 497 square miles. Organized in 1822.

Geology.—The surface rocks of the county comprise the entire series of shales and sandstones belonging to the Waverly formation, beginning at the Lake shore with the Huron and Erie shales, belonging to the Devonian system, and rising through the Cleveland shale, Bedford shale and Berea grit to the Cuyahoga shale, the uppermost member of the Waverly group, which covers the southern half of the county.

Topography.—The topography of the county is that of a level to gently rolling plain through which the northward flowing streams have cut channels that attain a depth of 75 to 150 feet in the northern half of the county, while the lake, at the time when it covered a much larger area than at present, has built up ridges running parallel with the coast.

Soils.—The entire county is covered with glacial drift, but this has been modified by the underlying rocks and by the lake, giving rise over the major part of the county to the Volusia soils characteristic of the Waverly and which are generally of the heavier clay or clay loam types in this county, while the sandy beaches of the ancient lake have weathered into the "Dunkirk sand" which parallels the shore of the lake at intervals across the State.

Agriculture.—Dairying has been the principal feature of the agriculture of the county throughout the period under review, although there has been a large reduction in the number of cattle kept during recent years. The cold, heavy soil has been found more congenial to the small grains than to corn, the nearly equal areas given to oats and wheat being each larger than that given to corn during the last three decades, while the hay crops have occupied an area larger than all the grain crops during the first two decades, and larger than the small grains combined during the later period.

The yield of corn per acre has been nearly stationary at a point below the average of the State for the 60 years, while those of oats and wheat have been a little larger than the State average, the yield of wheat rising to 18.3 bushels per acre for the last decade. During this period the expenditure for commercial fertilizers has risen to an average of $42,349 per annum.

The statistics show that the livestock kept in the county has diminished by the equivalent of 69 cattle for 1,000 acres of improved land in farms during the last three decades, while the purchase of fertilizers has risen to an annual expenditure of $82 for the same area of land.

LORAIN COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	30,308	35,526	40,295	54,857	76,037
White	.....	29,196	34,351	39,145	53,503	74,495
Negro	.....	1,106	1,169	1,133	1,344	1,521
Foreign born	.....	5,557	6,280	6,992	10,175	18,605
Rural	.....	.....	.....	.....	25,956	27,964
Urban	.....	.....	.....	.....	28,901	48,073

Population of cities or towns, 1910: Lorain, 28,883; Elyria, 14,825; Oberlin, 4,365, Wellington, 2,131; Amhurst, 2,106.

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area....Acres..	.....	.....	.....	318,080
Land in farms....Acres..	340,778	287,272	296,128	285,729
Improved land in farms....Acres..	281,894	238,279	222,680	232,984
Woodland in farms....Acres..	52,515	48,993	73,448	33,881
Other unimproved land in farms....Acres..	6,369			18,864
Total number of farms....Number..	3,669	3,481	3,660	3,586
Area of average farm....Acres..	92.9	82.5	80.9	79.7
Improved land per farm....Acres..	76.8	68.5	60.8	65.0
Value of all property per farm....Dollars..	5,065	5,261	4,792	7,074
Value of land and buildings per farm....Dollars..	4,487	4,639	4,188	6,100
Value of land and buildings per acre....Dollars..	48.30	56.23	51.77	76.54

LIVESTOCK: 10-year average numbers: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Horses....Number..	7,210	9,832	9,898	10,050	9,816	6,735
Cattle....Number..	29,356	30,951	33,168	28,830	18,478	18,111
Sheep....Number..	77,095	123,094	52,139	42,551	31,894	15,301
Hogs....Number..	10,151	11,200	10,600	10,401	8,065	5,978
Cattle equivalent: Tatal	45,291	54,212	49,340	44,175	32,290	26,974
Cattle equivalent: Per 1,000 acres	.....	.....	175	185	145	116

FARM CROPS: 10-year averages: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Corn....Acres..	12,274	14,212	18,466	17,712	17,679	19,566
Bushels..	405,577	471,775	704,316	551,779	531,425	630,900
Bushels per acre..	33.0	32.5	37.8	31.1	30.5	32.3
Oats....Acres..	4,701	8,123	12,443	17,531	19,667	21,325
Bushels..	112,280	253,406	448,936	681,886	645,093	795,643
Bushels per acre..	23.8	31.2	36.1	38.9	32.8	37.3
Wheat....Acres..	6,472	8,870	12,771	22,462	21,625	18,585
Bushels..	86,966	117,315	208,395	362,829	357,201	339,942
Bushels per acre..	13.4	13.2	16.3	16.1	16.5	18.3
Rye....Acres..	441	234	136	1,126	260	317
Bushels..	4,803	2,522	1,642	13,420	2,880	5,238
Bushels per acre..	10.5	10.8	12.1	11.9	11.1	16.5
Meadows....Acres..	32,240	36,391	36,322	37,813	42,224	38,153
Tons..	36,913	45,400	38,892	47,358	53,156	47,802
Tons per acre..	1.14	1.25	1.07	1.25	1.26	1.25
Clover....Acres..	.....	885	2,317	4,497	4,229	8,024
Tons..	.....	1,033	2,397	5,647	5,029	11,325
Tons per acre..	.....	1.17	1.03	1.26	1.19	1.41
Pasture....Acres..	.....	.....	93,030	105,296	93,437	95,357
Potatoes....Acres..	.....	1,413	1,384	1,945	2,557	2,719
Bushels..	.....	123,426	130,820	177,281	186,742	248,380
Bushels per acre..	.....	87.3	94.5	91.1	73.0	91.4
Orchards....Acres..	.....	5,705*	5,293	5,428	4,710	3,385
Apples....Bushels	.....	165,932	246,096	262 536	101,394	137,935

*3-year average.

LUCAS COUNTY

Location.—Lucas County is in northwestern Ohio. Bounded on the north by Michigan and Lake Erie; on the east by Lake Erie and Wood County; on the south by Ottawa and Wood Counties and on the west by Henry and Fulton. Area, 342 square miles. Organized in 1835.

Geology.—Lucas County lies on the western slope of the Cincinnati Arch, and its surface rocks include the limestones of that Arch over the eastern three-fourths of the county, with bands of the Oriskany sandstone, the Corniferous limestone, the Hamilton group and the Huron shale, reaching across the county from north to south over the western quarter. These rocks are everywhere covered with glacial drift.

Topography.—The surface of the county is that of a flat to very gently rolling plain, the slight elevations being due to beaches or sand dunes on the receding shores of the lake, which in geologic time covered the entire county. The Maumee River, which forms the southeastern boundary of the county, is the chief drainage channel.

Soils.—The soil of the larger part of the county is of the grayish Dunkirk and darker Clyde sands. Along the Maumee River, from Maumee to Waterville, and in the northeastern and northwestern corners of the county, are areas of Clyde clay loam. The lake shore is bordered for several miles with a strip of marsh land, a part of which has been redeemed by diking and pumping out the water.

Agriculture.—The flat, black land which occupies a relatively large part of Lucas County is better adapted to corn than to the small grains, and the area in corn has steadily increased, while the yield per acre has averaged higher than the average for the State. Wheat has stood next to corn in area until the last decade, when there was a large transfer of area from wheat to oats and corn.

The Dunkirk and Clyde sands form an excellent soil basis for trucking and gardening, and there has been a large development in gardening, especially in the production of vegetables under glass, in the region south and west of Toledo.

A large orchard industry has been developed on the heavier soils along the Maumee, where the air drainage effected by the river channel assists in protection from frost.

LUCAS COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	46,722	67,377	102,296	153,559	192,728
White	.....	45,944	66,281	101,115	151,755	190,757
Negro	.....	776	1,093	1,170	1,768	1,918
Foreign born	.....	14,119	17,354	25,784	30,528	34,667
Rural	.....	.....	.....	.....	21,737	24,231
Urban	.....	.....	.....	.....	131,822	168,497

Population of cities or towns, 1910: Toledo, 168,497; Maumee, 2,307; Sylvania, 1,002.

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area....Acres..	.....	.....	.....	218,880
Land in farms....Acres..	142,568	132,862	167,133	165,457
Improved land in farms....Acres..	98,798	97,448	131,098	137,543
Woodland in farms....Acres..	38,606	35,414	36,035	18,276
Other unimproved land in farms....Acres..	5,164			9,636
Total number of farms....Number..	2,056	1,956	2,807	2,784
Area of average farm....Acres..	69.3	67.9	59.5	59.4
Improved land per farm....Acres..	48.1	49.8	46.8	49.4
Value of all property per farm....Dollars..	4,759	5,892	5,334	8,347
Value of land and buildings per farm....Dollars..	4,321	5,304	4,824	7,555
Value of land and buildings per acre....Dollars..	62.35	78.11	81.08	127.10

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses....Number..	2,634	4,882	6,019	7,495	8,058	4,342
Cattle....Number..	6,608	8,627	9,376	9,622	8,048	7,917
Sheep....Number..	7,089	15,501	9,004	8,159	4,413	1,762
Hogs....Number..	5,958	7,265	8,411	8,537	7,223	6,711
Cattle equivalent {Total	10,547	15,786	17,137	18,787	17,270	13,106
Cattle equivalent {Per 1,000 acres	.....	.....	173	193	132	95

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn....Acres..	4,971	7,558	14,161	15,400	17,980	22,438
Bushels..	149,176	304,300	714,909	526,558	674,268	882,034
Bushels per acre..	30.0	39.7	50.5	34.1	37.5	39.3
Oats....Acres..	2,155	2,929	6,494	7,328	11,170	15,695
Bushels..	38,706	79,318	211,711	247,652	378,238	550,395
Bushels per acre..	17.9	27.1	32.6	33.8	33.8	35.1
Wheat....Acres..	3,175	7,049	8,765	13,794	13,076	8,359
Bushels..	44,012	97,087	143,439	228,874	220,615	153,107
Bushels per acre..	13.9	13.8	16.4	16.6	16.9	18.3
Rye....Acres..	434*	162	281	1,404	1,572	1,267
Bushels..	4,598	1,770	4,164	24,842	22,218	19,591
Bushels per acre..	10.5	10.9	14.8	17.7	14.1	15.5
Meadows....Acres..	9,713	11,022	11,316	11,261	11,033	11,712
Tons..	13,316	14,071	14,852	14,095	13,723	14,978
Tons per acre..	1.37	1.28	1.31	1.25	1.25	1.28
Clover....Acres..	.....	1,907	2,560	4,150	4,140	3,606
Tons..	.....	2,361	3,697	5,129	5,272	4,674
Tons per acre..	.....	1.24	1.44	1.24	1.27	1.29
Pasture....Acres..	.....	.....	7,665	8,664	9,583	17,081
Potatoes....Acres..	.....	1,306	2,130	2,396	2,945	3,468
Bushels..	.....	119,718	159,101	213,474	263,203	333,735
Bushels per acre..	.....	91.7	74.6	89.0	89.4	96.2
Orchards....Acres..	.....	3,506†	3,641	3,394	3,265	3,077
Apples....Bushels..	.....	69,865	133,002	138,947	69,798	78,962

*2-year average. †3-year average.

MADISON COUNTY

Location.—Madison County is in the southwestern quarter of the State. Bounded on the north by Union; on the east by Franklin and Pickaway; on the south by Fayette and on the west by Greene, Clark and Champaign. Area, 497 square miles. Organized in 1810.

Geology.—The upper rock over the whole of Madison County except a small area in the southwestern corner is the Waterlime. In that corner the Niagara limestone is found nearest the surface. The entire county is overlaid with a thick sheet of glacial drift.

Topography.—The surface of the county is that of a flat to gently undulating plain, the only exception to this contour being the sides of the stream valleys and a few north-and-south ridges built by glacial action. The drainage of the county is southeastwardly through the Darby and Deer Creeks and their branches into the Scioto.

Soils.—The predominant soils of the county are the yellow Miami clay loam and silt loam and the darker Clyde clay loam which characterize the larger part of western Ohio, the difference in color and character being due to differences in elevation which have caused a larger deposit of organic substance in the lower levels. A narrow belt of alluvium is found in the valley of Deer Creek. Over most of the county artificial drainage is a prime necessity to successful agriculture.

Agriculture.—At an early date in the settlement of the State the open woodlands of this county, with bluegrass growing under the trees, attracted the attention of a class of men accustomed to the grazing of cattle, and numerous large farms were established, chiefly by immigrants from Virginia, with the production of beef cattle as the leading pursuit, and Madison County became known as the home of some of the finest herds of Shorthorn cattle in America.

The general interest in cattle production in this county is shown in the cattle sales which have been held on the first Monday in each month for half a century.

The statistics show, however, that there has been a large reduction in the livestock of the county during the last 30 years, although in this county the reduction has been chiefly in sheep.

Corn is the principal crop of the county, occupying an area more than twice as great as that given to all the small grains combined during the first half of the 60-year period, and nearly twice as great since. The yields of corn and wheat have been about the average for the State. In Madison, as in most of the level counties, there has been a considerable shifting from wheat to oats during the last decade.

Madison County has made a small beginning in the use of commercial fertilizers, the amount purchased annually during the last decade being sufficient to give each acre of wheat less than 30 pounds, or much less total fertilizing substance than would be found in one ton of manure. But the loss in potential manure production in Madison County during the last 30 years amounts to the equivalent of more than 2 tons of manure for each acre of wheat grown during the last decade, counting only the manure that would have been produced during the winter months, while the total winter production of manure during this period has not been enough to furnish 2 tons for each acre of corn and wheat.

MADISON COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total		15,633	20,129	20,057	20,590	19,902
White		14,928	19,046	19,107	19,615	19,155
Negro		705	1,083	947	973	745
Foreign born		1,344	1,292	941	627	402
Rural					17,079	16,372
Urban					3,511	

Population of cities or towns, 1910: London, 3,530; Mount Sterling, 1,071; West Jefferson, 1,043; Plain City, 1,407; (Madison and Union).

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area—Acres				318,080
Land in farms—Acres	289,326	271,282	294,354	286,586
Improved land in farms—Acres	244,526	236,487	256,006	266,825
Woodland in farms—Acres	43,700	34,795	38,347	18,724
Other unimproved land in farms—Acres	1,090			4,037
Total number of farms—Number	2,377	1,903	1,928	1,833
Area of average farm—Acres	121.7	142.6	152.7	156.3
Improved land per farm—Acres	102.9	124.2	132.8	143.9
Value of all property per farm—Dollars	6,101	7,543	8,659	15,294
Value of land and buildings per farm—Dollars	5,217	6,502	7,557	13,494
Value of land and buildings per acre—Dollars	42.87	45.60	49.49	86.33

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses—Number	5 479	7,246	7,659	8,337	9,665	8,074
Cattle—Number	23,230	18,607	19,878	22,003	17,216	18,191
Sheep—Number	64,763	108,410	77,804	72,100	44,801	17,136
Hogs—Number	24,874	27,059	37,586	32,174	30,406	31,922
Cattle equivalent—Total	37 673	39,400	39,076	40,767	34,402	31,171
Cattle equivalent—Per 1,000 acres			159	172	134	118

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn—Acres	27,963	38,167	61,177	60,184	71,761	74,852
Bushels	1,009,518	1,378,520	2,284,435	2,254,681	2,835,460	2,771,245
Bushels per acre	36.1	38.1	37.3	37.4	39.4	37.0
Oats—Acres	1,748	2,752	2,509	3,261	5,279	24,563
Bushels	22,562	65,500	65,138	77,358	140,620	663,577
Bushels per acre	12.9	23.8	25.9	23.7	26.7	26.9
Wheat—Acres	6,421	6,640	8,819	26,008	32,504	18,662
Bushels	78,833	71,498	119,415	360,532	501,407	220,559
Bushels per acre	12.3	10.8	13.5	13.9	15.4	11.8
Rye—Acres	693.5	863	709	2,282	506	959
Bushels	6,713	9,504	8,794	29,994	4,991	9,849
Bushels per acre	9.7	11.0	12.4	13.1	9.9	10.3
Meadows—Acres	11,395	13,947	12,963	16,885	15,291	14,359
Tons	11,937	15,807	16,288	19,727	17,617	15,542
Tons per acre	1.05	1.13	1.25	1,17	1.15	1.07
Clover—Acres		425	703	3,090	6,196	8,691
Tons		378	477	2,943	6,283	8,370
Tons per acre		.89	.68	.89	1.01	.96
Pasture—Acres			110,343	101,724	80,501	81,441
Potatoes—Acres		333	420	524	376	218
Bushels		22,995	27,221	40,555	25,206	18,244
Bushels per acre		69.0	64.8	77.4	67.0	83.6
Orchards—Acres		1,405	2,009	1,798	1,429	921
Apples—Bushels		35 937	62 494	50,535	26,273	17,415

MAHONING COUNTY

Location.—Mahoning County is bounded on the north by Trumbull County; on the east by Lawrence County, Pennsylvania; on the south by Columbiana County, and on the west by Stark and Portage Counties. Area, 427 square miles.

Geology.—The surface rocks of Mahoning County are the sandstones, shales and limestones of the coal measures, which have been covered over with a layer of glacial drift, derived from similar formations in the north.

Topography.—The topography of the greater part of this county is gently rolling, with small areas of level land in the western portion. The Mahoning River crosses the northeastern corner of the county in a deep valley, the sides of which are somewhat steep. The drainage of the major part of the county is to the northward, into the Mahoning River, but the southern townships drain southward.

Soils.—The soils of Mahoning County belong to the Volusia and Trumbull series, a type of soils characterized by deficiency in lime, by fine grained, silty texture and light yellow to gray color when dry. The subsoil is so impervious that the land dries slowly, making underdrainage necessary to the most successful cultivation.

Agriculture.—The statistics of crop production show an approximately equal area in the three cereals, corn, oats and wheat, with more than twice as many acres in meadows and clover as in either of the cereal crops, thus indicating that a more or less systematic rotation of crops is practiced.

The rate of production has averaged nearly 34 bushels of corn and a little more than 29 bushels of oats and 14 bushels of wheat for the 60 years, 1850-1909. Corn does not manifest any decided tendency toward increasing yields. The yield of oats has been a little higher during the latter half of the 60-year period than during the earlier, while the yields of wheat have averaged 16.5 bushels per acre for the last three decades as against 12.1 bushels for the first three, an increase doubtless due in large measure to increasing use of commercial fertilizers, the expenditure for which was insignificant before 1880, but had grown to an annual purchase of 1,500 tons for the 10 years, 1900-1909.

With this increase in the purchase of chemical fertilizers, however, there has been a reduction in the livestock of the county equivalent to 11,000 head of cattle, computing 10 sheep or swine as equivalent to one cow or horse in manure production, or enough to have produced 55,000 tons of manure each year during the 6 months of winter feeding; or manure enough to have produced 160,000 bushels of corn, 70,000 bushels of wheat and 5,000 tons of hay, had its use been followed by such increase in crops as has been obtained as a 20-year average at the State Experiment Station.

The fertilizers purchased probably contained about 30,000 pounds each of nitrogen and potash with 240,000 pounds of phosphoric acid, while 55,000 tons of manure should have carried 500,000 pounds each of nitrogen and potash, with 320,000 pounds of phosphoric acid.

MAHONING COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total		31,001	42,871	55,979	70,134	116,151
White		30,744	42,419	55,223	69,101	114,046
Negro		257	449	755	1,023	2,083
Foreign born		5,809	8,800	13,135	15,379	33,418
Rural					25,249	28,743
Urban					44,885	87,408

Population of cities or towns, 1910: Youngstown, 79,066; East Youngstown, 4,972; Struthers, 3,370; Sebring, 2,105; Lowellville, 1,592;

FARMS: U. S. Census

FARMS: U. S. Census	1880	1890	1900	1910
Approximate land area—Acres				273,280
Land in farms—Acres	251,714	237,560	247,976	234,999
Improved land in farms—Acres	193,503	185,748	175,213	164,638
Woodland in farms—Acres	54,401	51,812	72,763	34,211
Other unimproved land in farms—Acres	3,810			36,150
Total number of farms—Number	2,842	2,794	3,034	3,024
Area of average farm—Acres	88.6	85.0	81.7	77.7
Improved land per farm—Acres	68.1	66.5	57.7	54.4
Value of all property per farm—Dollars	5,697	4,812	4,194	6,305
Value of land and buildings per farm—Dollars	5,147	4,168	3,591	5,496
Value land and buildings per acre—Dollars	58.09	49.04	43.95	70.60

LIVESTOCK; Ten-year average numbers: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Horses—Number	7,481	7,829	7,845	8,235	8,965	5,835
Cattle—Number	21,275	19,298	19,793	19,912	16,290	16,175
Sheep—Number	78,923	105,884	66,778	68,722	39,867	16,950
Hogs—Number	12,457	9,580	8,553	8,429	7,889	6,742
Cattle equivalent—Total	37,694	38,673	35,171	35,862	30,030	24,379
Cattle equivalent—Per 1,000 acres			182	193	171	148

FARM CROPS; Ten-year averages: Ohio statistics

	1850–50	1860–69	1870–79	1880–89	1890–99	1900–09
Corn—Acres	11,412	11,046	13,501	13,204	13,714	13,355
Bushels	250,041	357,056	588,946	402,361	457,752	437,392
Bushels per acre	30.6	32.5	44.6	30.1	33.3	32.5
Oats—Acres	10,605	10,853	13,452	15,012	16,116	15,360
Bushels	262,493	309,957	373,608	488,384	465,474	526,402
Bushels per acre	24.7	28.5	27.7	32.5	28.9	34.3
Wheat—Acres	13,583	9,270	10,596	14,338	14,990	14,468
Bushels	163,787	108,104	134,395	228,459	260,198	232,035
Bushels per acre	12.1	11.6	12.7	15.9	17.4	16.1
Rye—Acres	1,786	1,000	554	2,562	447	332
Bushels	9,873	10,098	5,805	28,910	3,961	5,646
Bushels per acre	5.5	10.1	10.5	11.3	8.8	17.0
Meadows—Acres	28,758	30,175	31,640	27,158	28,421	32,974
Tons	39,039	36,755	33,333	37,513	39,295	43,477
Tons per acre	1.34	1.22	1.05	1.38	1.35	1.32
Clover—Acres		4,097	4,236	8,107	4,683	3,224
Tons		4,956	5,425	10,524	6,481	5,181
Tons per acre		1.22	1.28	1.30	1.38	1.61
Pasture—Acres			75,420	69,107	64,678	83,354
Potatoes—Acres		1,029	1,181	1,352	2,419	2,630
Bushels		91,567	112,820	127,415	163,940	258,496
Bushels per acre		89.2	95.6	94.2	68.0	98.3
Orchards—Acres		3,940	4,816	4,749	4,611	4,258
Apples—Bushels		106,322	224,340	223,792	136,622	201,973

MARION COUNTY

Location.—Marion County is in the northwestern quarter of the State. Bounded on the north by Wyandot and Crawford; on the east by Morrow; on the south by Morrow, Delaware and Union and on the west by Union and Hardin. Area, 408 square miles. Organized in 1824.

Geology.—The Huron shale is the surface rock under the eastern edge of the county; the Corniferous and Helderberg (Waterlime) limestones cover the greater part of the remainder, with a small area of Niagara limestone in the northwestern corner. These rocks are everywhere covered with glacial drift.

Topography.—The topography is that of a flat to gently undulating plain, with a small area of more rolling land in the eastern part. The principal drainage channels are the upper waters of the Olentangy and Scioto Rivers, flowing through the county from the north and west to the south, and the headwaters of the Tymochtee and Little Sandusky, which rise in the northwestern corner of the county and flow northward into the Sandusky, the divide between the lake and river drainage being a low, narrow belt.

Soils.—The county contains considerable areas of flat, black, prairie land, classed as Clyde clay loam, in which are low elevations originally forested and having a gray clay soil. This type, together with areas of a more brownish color—the Miami silt loam and clay loam—covers the remainder of the county, constituting a soil rich in the mineral elements of fertility but requiring drainage for the most profitable cultivation.

Agriculture.—Corn is the principal crop of the county, occupying as much land as all the small grains combined, and giving about the average yield of the State as also do oats and wheat. The shifting from wheat to oats which is observed generally over the flat lands of the State has taken place in this county also.

The same reduction in livestock which has occurred over the most of the State during the last 30 years is shown in Marion county, the falling off being equivalent to about 10,000 cattle.

The annual expenditure for fertilizers during the last decade was but $6,599, so that but little is yet being done to maintain the fertility balance.

MARION COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total		16 184	20,565	24,727	28,678	33,971
White		16,087	20,368	24 461	28,501	33,739
Negro		97	197	260	176	232
Foreign born		1,911	1,825	1,788	1,470	1,362
Rural					16,816	15 739
Urban					11,862	18,232

Population of cities or towns, 1910: Marion, 18,232.

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area Acres				261,760
Land in farms Acres	263,104	232,545	241,191	242,376
Improved land in farms Acres	208,355	193,602	206,505	216,692
Woodland in farms Acres	51,775	38,943	34,686	20,249
Other unimproved land in farms Acres	2,974			5,435
Total number of farms Number	2,181	2,112	2,227	2,141
Area of average farm Acres	120.6	110.2	108.3	113.2
Improved land per farm Acres	95.5	91.7	92.7	101.2
Value of all property per farm Dollars	6,434	6,002	5,810	11,144
Value of land and buildings per farm Dollars	5,683	5,219	4,992	9,730
Value of land and buildings per acre Dollars	47.12	47.36	46.10	85.95

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses Number	6,029	7,218	7,550	7,890	8,129	5,877
Cattle Number	17,265	16,350	17,481	16,261	12,578	12,846
Sheep Number	70,408	95,009	82,231	75,210	60,242	45,058
Hogs Number	26,464	17,910	25,621	25,388	21,841	24,003
Cattle equivalent Total	32,981	35,860	35,816	34,211	28,915	25,629
Cattle equivalent Per 1,000 acres			172	177	140	118

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn Acres	26,174	28,917	37,254	41,264	42,129	45,891
Bushels	931,352	866,235	1,355,051	1,443,673	1,543,831	1,760,942
Bushels per acre	35.5	28.9	36.2	34.9	36.6	38.4
Oats Acres	6,089	6,428	10,874	10,383	14,706	23,248
Bushels	96,580	178,703	355,250	337,784	457,660	795,129
Bushels per acre	15.8	27.8	32.7	32.5	31.1	34.2
Wheat Acres	7,382	13,238	15,964	29,373	25,286	17,477
Bushels	88,240	166,113	230,460	394,673	381,175	253,733
Bushels per acre	12.0	12.5	14.4	13.4	15.1	14.5
Rye Acres	439	246	125	823	255	287
Bushels	2,916	2,850	1,740	932	2,541	3,687
Bushels per acre	6.7	11.6	13.8	11.3	10.0	12.8
Meadows Acres	14,687	16,675	15,845	15,363	21,963	18,767
Tons	16,901	22,027	18,068	19,181	26,512	24,185
Tons per acre	1.15	1.32	1.16	1.25	1.21	1.30
Clover Acres		4,072	5,288	7,398	7,461	10,568
Tons		4,325	6,075	8,022	9,599	13,812
Tons per acre		1.06	1.15	1.10	1.30	1.31
Pasture Acres			52,778	52,537	53,039	70,985
Potatoes Acres		620	845	1,052	1,393	887
Bushels		43,074	59,954	84,265	68,778	69,692
Bushels per acre		69.4	70.9	84.8	49.5	78.6
Orchards Acres		2,633	3,071	2,742	2,516	1,790
Apples Bushels		135,413	153,576	90,826	60,192	48,383

MEDINA COUNTY

Location.—Medina County is in the northeastern quarter of the State. Bounded on the north by Lorain and Cuyahoga; on the east by Summit; on the south by Wayne, and on the west by Ashland and Lorain. Area, 435 square miles. Organized in 1812.

Geology.—The western three-fourths of the county lies over the Cuyahoga shale, the upper member of the Waverly group. The lower coal measures appear in the southeastern corner of the county, and between this formation and the Waverly and extending to the north line of the county, occupying three townships and part of two others, the rock floor consists of the Conglomerate. The rocks are everywhere covered with glacial drift.

Topography.—The general topography is gently rolling, with a few small areas of flat land. The divide between the lake and river drainage passes through the southern part of the county; the marshes at Lodi could be drained either north or south. The principal drainage outlets are northward to the lake through the east branch of Black River and the west branch of Rocky River, but the Killbuck and Chippewa carry southward flowing waters from the southern and southeastern parts of the county.

Soils.—The soil of the county is classed with the clay loams and silt loams of the Volusia type, with the exception of small areas of alluvium in the stream valleys and a few hundred acres of marsh on the watershed. This marsh land has been reclaimed and is now the most valuable land in the county, being devoted chiefly to onions and celery.

Agriculture.—Nearly equal areas are given to the three principal cereals, corn, oats and wheat, while the hay crops occupy more land than either one of the cereals. The acre-yields of corn have been somewhat below the average of the State for the last 30 years, while those of oats, and especially of wheat, have shown a marked increase for this period over the preceding similar period.

The livestock of the county has diminished by the equivalent of 14,000 cattle during the 50 years, 1860-1909, while the annual expenditure for commercial fertilizers has been as shown below for the last three decades:

	Tons	Cost
1880-89	.....	$38,228
1890-99	1,725	47,775
1900-09	3,333	71,509

The fertilizers purchased annually during the last decade have amounted to the equivalent of 310 pounds for each acre sown to wheat, although of course they were not all applied to the wheat crop.

Medina County lies between Wayne and Cuyahoga Counties. The Experiment Station is located at Wooster, in Wayne County, and has a test farm at Strongsville, Cuyahoga County, just north of the Medina County line. A duplicate experiment has been in progress for 25 years on the warm Wooster silt loam at the Station, and for 23 years on the cold, Volusia clay loam at Strongsville, the results of which justify the belief that a much more liberal use of fertilizers and manure might be made in Medina County with profit.

MEDINA COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total		20,092	21,453	21,742	21,958	23,598
White		20,042	21,417	21,611	21,817	23,484
Negro		50	36	130	141	114
Foreign born		1,533	1,611	1,480	1,219	1,409
Rural					21,958	17,791
Urban						5,807

Population of cities or towns, 1910; Wadsworth, 3,073; Medina, 2,734; Lodi, 1,015.

FARMS; U S. Census

Farms: U. S. census	1880	1890	1900	1910
Approximate land area, Acres				278,400
Land in farms, Acres	267,214	251,624	255,708	254,968
Improved land in farms, Acres	215,771	206,320	192,662	190,396
Woodland in farms, Acres	47,057	45,304	63,046	35,810
Other unimproved land in farms, Acres	4,386			28,762
Total number of farms, Number	3,080	3,017	2,978	3,159
Area of average farm, Acres	86.8	83.4	85.9	80.7
Improved land per farm, Acres	70.0	68.4	64.7	60.3
Value of all property per farm, Dollars	5,251	4,840	4,402	6,015
Value of land and buildings per farm, Dollars	4,660	4,236	3,749	5,021
Value of land and buildings per acre, Dollars	53.69	50.79	43.64	62.22

LIVESTOCK: Ten year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-90
Horses, Number	7,014	8,101	7,974	8,389	8,870	6,866
Cattle, Number	24,596	22,822	24,796	20,596	15,692	15,111
Sheep, Number	99,012	126,068	55,663	58,943	42,905	21,414
Hogs, Number	12,307	10,128	9,441	9,488	8,397	9,190
Cattle equivalent, Total	42,742	44,543	39,280	35,828	29,692	25,037
Cattle equivalent, Per 1,000 acres			182	174	154	131

*9-year average. †8-year average.

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn, Acres	13,240	13,456	15,590	16,690	19,054	20,556
Corn, Bushels	472,700	465,950	640,175	510,407	619,480	714,618
Corn, Bushels per acre	34.9	34.6	40.8	30.2	32.5	34.7
Oats, Acres	9,702	11,427	14,856	16,325	19,839	21,457
Oats, Bushels	241,517	358,392	481,886	573,387	678,692	798,901
Oats, Bushels per acre	24.8	31.4	32.4	35.1	34.2	37.2
Wheat, Acres	12,438	10,239	12,115	22,751	23,128	21,613
Wheat, Bushels	171,861	121,935	189,086	401,200	386,669	394,027
Wheat, Bushels per acre	13.8	11.9	15.6	17.6	16.7	18.2
Rye, Acres	959*	768	333	998	347	712
Rye, Bushels	9,617	9,653	4,670	14,532	5,006	12,869
Rye, Bushels per acre	10.2	12.6	14.0	14.5	14.4	18.1
Meadows, Acres	29,895	34,225	30,845	24,604	28,328	29,914
Meadows, Tons	36,552	39,652	32,399	30,021	35,317	26,838
Meadows, Tons per acre	1.22	1.16	1.04	1.22	1.25	1.23
Clover, Acres		3,228	5,623	10,217	8,702	12,241
Clover, Tons		3,435	5,727	12,490	10,709	17,411
Clover, Tons per acre		1.06	1.02	1.20	1.23	1.42
Pasture, Acres			73,142	80,047	62,362	68,471
Potatoes, Acres		1,027	1,028	1,144	1,792	3,238
Potatoes, Bushels		93,207	91,902	101,878	170,690	342,365
Potatoes, Bushels per acre		90 8	89.4	97.8	95.2	105.7
Orchards, Acres		4,570†	5,311	4,680	3,928	3,023
Apples, Bushels		167 959	249,676	202,600	105,933	118,882

*2-year average. †3-year average.

MEIGS COUNTY

Location.—Meigs County is in the southeastern quarter of the State, on the Ohio River. Bounded on the north by Athens; on the east by the Ohio River and Wood and Jackson Counties, West Virginia; on the south by the Ohio River and Mason County, West Virginia, and Gallia County, Ohio. On the west by Vinton County. Area, 412 square miles. Organized in 1819.

Geology.—The surface rocks in Meigs County are the alternating sandstones and limestones of the barren coal measures, the sandstones covering the larger area while many of the hillsides have outcrops of limestone.

Topography.—The topography is hilly to very hilly, there being no level land except the narrow fringe of bottom land along the Ohio River, and the still narrower valleys of the smaller streams, which, rising in the southern part of Athens County, flow through Meigs into the Ohio.

Soils.—The soils are the Meigs series, including the Dekalb silt loam, the reddish Upshur clay, and the gradations between the two, the Dekalb soils being derived from the weathering of shaly sandstones and shales, while the Upshur soils are frequently of calcareous origin. The valley soils are alluvium, modified by the washings from the adjoining hills.

Agriculture.—The crop yields in Meigs, in common with those of most of the counties bordering the Ohio River, are very low. The bottoms and the less steep hillsides produce good crops, but much land is kept under the plow that is too steep for profitable cultivation. Comparatively few sheep are kept, although where properly cared for they do well, and the farms on which they are kept show the effect in their better condition.

The Southeastern Test Farm of the Experiment Station is located at Carpenter, in the northern part of Meigs County, on a typical Dekalb silt loam. The work that has been done on this farm has demonstrated the possibility of very greatly increasing the yields of Meigs County soils, by measures within the reach of every farmer in the county, and at a cost which will yield a return of one hundred to several hundred percent on the cost of treatment.

Phosphorus, as carried in acid phosphate, is the least expensive of the fertilizing elements as sold in commercial fertilizers and is the first element required on practically every Ohio soil. It is practicable to apply the quantity of acid phosphate used on this experiment farm—120 pounds per acre each on corn and wheat—to any field in Ohio that ought to be cultivated. The use of acid phosphate is the first step, after drainage, in the improvement of every soil in the State except those which require liming, and this step makes possible the keeping of more livestock and thus producing more manure, which is the cheapest source of potassium, and, after clover, the cheapest source of nitrogen to the Ohio farmer, especially to the farmer among the hills.

MEIGS COUNTY STATISTICS

POPULATION; U. S. Census

	1860	1870	1880	1890	1900	1910
Total		31,465	32,325	29,813	28,620	25,594
White		29,841	30,527	28,408	27,651	24,904
Negro		1,624	1,798	1,405	969	690
Foreign born		3,285	2,277	1,388	909	497
Rural					21,182	18,377
Urban					7,438	7,217

Population of cities or towns, 1910: Pomeroy, 4,023; Middleport, 3,194.

FARMS: U. S. Census

Farms: U. S. census	1880	1890	1900	1910
Approximate land area—Acres				263,680
Land in farms—Acres	268,053	245,278	261,153	253,846
Improved land in farms—Acres	189,378	188,648	204,486	192,489
Woodland in farms—Acres	73,736	56,630	56,667	44,105
Other unimproved land in farms—Acres	4,939			17,252
Total number of farms—Number	2,723	2,883	3,231	3,036
Area of average farm—Acres	98.4	85.1	80.8	83.6
Improved land per farm—Acres	69.6	65.4	63.3	63.4
Value of all property per farm—Dollars	2,501	2,424	1,992	2,661
Value of land and buildings per farm—Dollars	2,177	2,058	1,643	2,158
Value of land and buildings per acre—Dollars	22.12	24.18	20.33	25.81

LIVESTOCK: Ten-year average numbers; Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses—Number	3,513	5,185	5,524	5,098	5,732	3,742
Cattle—Number	11,112	13,139	14,837	13,164	11,860	8,613
Sheep—Number	16,481	27,959	22,183	48,776	37,110	22,799
Hogs—Number	12,098	13,264	12,063	7,381	5,573	2,383
Cattle equivalent—Total	17,486	22,446	23,786	23,878	21,860	14,873
Cattle equivalent—Per 1,000 acres			126	127	107	77

FARM CROPS: Ten-year averages; Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn—Acres	13,200	15,934	18,780	15,117	16,463	13,712
Bushels	380,020	465,834	555,414	390,236	442,631	362,644
Bushels per acre	28.8	29.2	29.6	25.8	26.8	26.5
Oats—Acres	2,678	4,365	4,625	3,663	2,436	2,638
Bushels	32,636	81,696	77,539	57,123	39,959	44,838
Bushels per acre	12.2	18.7	16.7	15.6	16.3	17.0
Wheat—Acres	17,017	16,361	17,624	17,427	18,784	12,652
Bushels	201,516	137,004	170,292	172,247	233,220	146,590
Bushels per acre	11.8	8.4	9.7	9.9	12.5	11.6
Rye—Acres	737.5*	309	380	177	147	217
Bushels	7,570	2,730	2,988	1,468	848	1,526
Bushels per acre	10.3	8.8	7.9	8.3	5.8	7.0
Meadows—Acres	9,843	12,686	11,914	17,520	17,919	19,242
Tons	12,399	25,602	11,720	17,916	16,296	17,930
Tons per acre	1.26	1.23	.98	1.02	.91	.93
Clover—Acres		912	1,136	1,481	2,158	1,959
Tons		443	703	959	1,413	1,237
Tons per acre		.49	.62	.65	.66	.63
Pasture—Acres			48,824	85,961	95,320	110,785
Potatoes—Acres		1,283	1,783	1,839	1,216	793
Bushels		66,846	112,624	104,321	75,354	61,064
Bushels per acre		52.1	63.2	56.4	61.9	79.0
Orchards—Acres		4,949†	5,639	5,893	5,939	4,068
Apples—Bushels		175 457	174,472	199,371	88,918	42,862

*2-year average. †3-year average.

MERCER COUNTY

Location.—Mercer County is on the western line of the State. Bounded on the north by Van Wert; on the east by Auglaize; on the south by Darke and on the west by Adams and Jay Counties, Indiana. Area, 450 square miles. Organized in 1820.

Geology.—The entire county rests upon the Niagara limestone, which is covered with a thick sheet of glacial drift.

Topography.—The topography is that of a flat plain, with a few low, gravelly ridges. The drainage of the northern third of the county is through the St. Mary's northwestward to Fort Wayne, where it joins the St. Joseph to form the Maumee. The southern part of the county is drained by the headwaters of the Wabash. The Grand Reservoir, constructed as a feeder to the Miami canal, covers about 20 square miles, and its waters flow both to Lake Erie and the Ohio River.

Soils.—The soils are the yellow Miami and darker Clyde loams which characterize the western half of the State, and which give a fertile soil wherever sufficiently drained.

Agriculture.—Corn is the principal crop of the county, although wheat has held a close second in acreage until the last decade, during which there was a marked transfer from wheat to oats. The yield of corn has reached a point a little above the average of the State, while that of wheat is near the average of the middle belt of the State. The area in clover has steadily increased. The figures as a whole indicate a fairly systematic rotation of crops.

The number of farm animals has been maintained at a more uniform level than in most counties, but the ratio of livestock to improved land has diminished here as elsewhere, due to the bringing of new land into cultivation.

The expenditure for commercial fertilizers reached a total of $3,700 per annum during the last decade, or about 12½ cents for each acre sown in wheat. On the Miami County Experiment Farm, the soil of which is very similar to that in Mercer County, 200 pounds of acid phosphate per acre has increased the yield of wheat as a 5-year average by from 9 to 12 bushels over an average unfertilized yield of 14 bushels. There is no reason to doubt the possibility of profitably increasing Mercer County's wheat yield to an average of 25 bushels per acre.

MERCER COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	17,254	21,808	27,220	28,021	27,536
White	.....	16,810	21,502	27,000	27,828	27,421
Negro	.....	444	306	217	142	115
Foreign born	.....	2,215	2,143	2,184	1,628	1,110
Rural	.....	.....	.....	.....	25,206	24,043
Urban	.....	.....	.....	.....	2,815	3,493

Population of cities or towns, 1910: Celina, 3,493; Fort Recovery, 1,193; Rockford, 1,186.

FARMS: U. S. Census

Farms: U. S. census	1880	1890	1900	1910
Approximate land area ..... Acres..	.....	.....	.....	288,000
Land in farms ..... Acres..	258,465	265,150	274,909	277,605
Improved land in farms ..... Acres..	153,869	184,245	217,017	232,094
Woodland in farms ..... Acres..	101,852	80,905	57,892	42,008
Other unimproved land in farms ..... Acres..	2,744			3,503
Total number of farms ..... Number..	2,440	2,961	3,288	3,213
Area of average farm ..... Acres..	94.3	89.5	83.6	86.4
Improved land per farm ..... Acres..	56.2	62.2	66.0	72.2
Value of all property per farm ..... Dollars..	3,228	4,316	4,144	9,005
Value of land and buildings per farm ..... Dollars..	2,793	3,767	3,545	7,818
Value of land and buildings per acre ..... Dollars..	29.62	42.09	42.40	90.49

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses ..... Number..	3,670	6,131	7,150	8,045	8,860	7,792
Cattle ..... Number..	8,846	12,353	14,760	18,606	15,264	15,432
Sheep ..... Number..	6,913	22,603	15,917	11,648	10,814	9,749
Hogs ..... Number..	18,504	29,658	28,330	30,903	27,158	25,969
Cattle equivalent { Total	15,058	23,710	26,335	30,906	27,921	26,796
Cattle equivalent { Per 1,000 acres	.....	.....	171	168	129	115

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-10
Corn ..... Acres..	12,767	19,635	31,208	36,076	43,497	48,259
Bushels..	350,899	516,183	1,001,934	1,247,346	1,381,728	1,916,049
Bushels per acre..	28.2	26.1	32.6	33.8	31.7	39.7
Oats ..... Acres..	4,199	6,779	14,596	15,083	22,264	30,722
Bushels..	55,244	150,062	377,545	467,252	575,999	1,043,236
Bushels per acre..	13.1	22.1	25.8	31.1	25.8	33.9
Wheat ..... Acres..	11,631	19,325	21,956	30,922	35,345	29,600
Bushels..	130,282	199,278	269,013	406,355	537,645	443,453
Bushels per acre..	11.2	10.3	12.2	13.1	15.2	15.0
Rye ..... Acres..	1,486*	798	442	282	1,392	571
Bushels..	12,753	8,245	5,169	4,036	18,050	7,762
Bushels per acre..	8.6	10.3	11.7	8.3	13.0	13.6
Meadows ..... Acres..	6,951	7,675	8,170	12,054	18,183	15,755
Tons..	8,295	8,309	9,315	14,496	20,102	18,889
Tons per acre..	1.19	1.08	1.15	1.20	1.11	1.19
Clover ..... Acres..	.....	4,559	5,891	7,498	8,695	13,884
Tons..	.....	3,958	5,338	7,961	9,806	17,286
Tons per acre..	.....	.87	.91	1.06	1.13	1.24
Pasture ..... Acres..	.....	.....	12,628	11 786	21,543	37,932
Potatoes ..... Acres	.....	611	803	933	1,003	765
Bushels..	.....	33,415	49,881	70,394	52,631	53,493
Bushels per acre..	.....	54.7	62.1	75.4	52.6	69.9
Orchards ..... Acres..	.....	2,399†	2,897	2,341	2,552	2 287
Apples ..... Bushels..	.....	55 864	79 876	66,231	45,792	31 616

*2-year average. †3-year average.

MIAMI COUNTY

Location.—Miami County is in the southwestern quarter of the State. Bounded on the north by Shelby; on the east by Champaign and Clark; on the south by Montgomery and on the west by Darke. Area, 408 square miles. Organized in 1807.

Geology.—The greater part of the county lies over Niagara limestones, with small areas of the Richmond formation in the southeastern corner. The entire county is covered with glacial drift, containing numerous gravel ridges.

Topography.—The surface is that of a flat to gently rolling plain, crossed from north to south near the middle and through the western half by the shallow valleys of the Great Miami and Stillwater.

Soils.—The soils are the Miami and Clyde loams, with a small area of the more gravelly Bellefontaine type in the southeastern part of the county, and considerable areas of alluvium in the river valleys.

Agriculture.—Corn has been the leading crop of the county in area throughout the 60 years of our record, with wheat running a very close second during the fourth and fifth decades. During the last decade, however, wheat has fallen off in yield per acre and in area, while oats and corn have increased in both.

The agriculture of this and other Miami Valley counties is peculiar in that clover occupies a greater area than other hay crops, although the land in all the hay crops has not equalled that in either wheat or corn, indicating that clover has not yet been given opportunity to perform its full function.

In yields of corn per acre Miami and Van Wert Counties have led the State during the last decade. Miami's wheat yield has been equalled, though not exceeded, by several of the southwestern counties during the same period.

The livestock statistics of Miami County show that the total number of animals was well maintained until the 'eighties, but that there has been a falling off since that decade equivalent to 8,000 cattle. Meanwhile the expenditure for commercial fertilizers has risen as shown below:

Annual expenditure for commercial fertilizers in Miami County:

Decade	Pounds	Cost
1880-89	.....	$2,310
1890-99	1,759,331	8,337
1900-09	2,217,009	20,192

The quantity purchased during the last decade, if all applied to the wheat crop, would furnish less than 60 pounds for each acre of wheat sown.

An experiment farm was established in Miami County in 1911, being located on land nearly equally divided between Miami silt loam and the black Clyde clay loam soils.

The results attained at this farm justify the use of acid phosphate, and when obtainable at a reasonable price, that of some carrier of potassium, in very much larger quantity than is now practiced in the county. The deficiency in potassium might be effectually overcome by more systematic saving and larger use of manure.

MIAMI COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total		32,740	36,158	39,754	43,105	45,047
White		31,691	34,984	38,575	41,945	43,936
Negro		1,049	1,172	1,177	1,153	1,109
Foreign born		2,509	2,177	2,219	1,799	1,482
Rural					25,052	25,537
Urban					18,053	19,510

Population of cities or towns: Piqua, 13,388; Troy, 6,122; Tippecanoe City, 2,038; Covington, 1,848; West Milton, 1,207; Bradford (part of), 1,175.

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area—Acres				261,120
Land in farms—Acres	241,052	233,642	249,411	247,456
Improved land in farms—Acres	189,369	202,197	219,112	721,371
Woodland in farms—Acres	48,639	31,445	30,299	17,163
Other unimproved land in farms—Acres	3,044			8,922
Total number of farms—Number	2,629	2,706	2,989	3,328
Area of average farm—Acres	91.7	86.3	83.4	74.4
Improved land per farm—Acres	72.0	74.7	73.3	66.5
Value of all property per farm—Dollars	7,115	6,566	5,450	8,492
Value of land and buildings per farm—Dollars	6,483	5,978	4,866	7,606
Value of land and buildings per acre—Dollars	70.70	69.27	58.35	102.23

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses—Number	8,270	9,451	9,958	11,097	10,922	8,434
Cattle—Number	16,001	15,097	15,475	16,489	12,875	12,464
Sheep—Number	20,762	19,278	10,798	10,415	5,988	2,197
Hogs—Number	33,615	29,019	27,121	19,304	15,578	14,706
Cattle equivalent: Total	29,709	29,378	29,225	30,558	25,954	22,558
Cattle equivalent: Per 1,000 acres			154	151	118	102

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn—Acres	38,483	38,662	48,500	50,084	47,768	54,290
Bushels	1,472,145	1,336,115	1,881,500	2,022,903	1,789,567	2,372,410
Bushels per acre	33.1	34.3	38.8	40.4	37.4	43.7
Oats—Acres	8,543	9,906	11,920	9,278	13,424	23,040
Bushels	158,799	287,920	337,545	302,285	437,995	826,160
Bushels per acre	18.6	29.1	28.7	32.8	32.6	35.9
Wheat—Acres	27,392	35,784	36,044	48,594	47,353	38,251
Bushels	419,495	507,551	544,324	793,462	787,992	596,457
Bushels per acre	15.3	14.2	15.1	16.3	17.6	15.4
Rye—Acres	1,615	696	490	201	447	269
Bushels	15,681	8,819	5,911	2,639	4,976	3,536
Bushels per acre	9.7	12.7	12.1	13.1	11.1	13.1
Meadows—Acres	8,724	6,868	5,913	6,697	9,691	10,294
Tons	9,548	7,297	6,386	8,293	12,684	13,174
Tons per acre	1.09	1.06	1.08	1.24	1.22	1.28
Clover—Acres		7,284	9,093	15,077	15,505	13,228
Tons		3,401	5,155	9,468	10,437	11,321
Tons per acre		.47	.57	.63	.72	.85
Pasture—Acres			13,181	8,722	8,450	13,512
Potatoes—Acres		685	1,105	1,156	1,611	1,148
Bushels		47,723	78,987	96,461	102,946	92,060
Bushels per acre		70.0	71.4	83.4	63.9	80.2
Orchards—Acres		3,376	3,806	2,350	2,200	1,455
Apples—Bushels		91,930	112,904	65,083	34,483	21,510

MONROE COUNTY

Location.—Monroe County is in the southeastern quarter of the State. Bounded on the north by Belmont; on the east by the Ohio River and Marshall and Wetzel Counties, West Virginia; on the south by Washington and on the west by Noble. Area, 448 square miles. Organized in 1813.

Geology.—The surface rocks are the Monongahela and Dunkard formations of the upper coal measures. The coal seams in the county are thin and of comparatively little value, but it is a large producer of oil.

Topography.—The county is very hilly, there being no level land except the narrow terrace along the Ohio River. The drainage of the southern half of the county is through the Little Muskingum River into the Ohio and that of the northern half through Wills Creek into the Muskingum, and through Sunfish Creek into the Ohio.

Soils.—The soils belong to the Meigs series, including Dekalb silt loam and Upshur clay.

Agriculture.—The agricultural conditions and general outcome in Monroe County are so similar to those in Meigs that the discussion of one county seems to be almost equally applicable to the other.

The increase in the area of pastures, which in both counties is coincident with a decrease in the number of livestock, indicates a decline in the feed production of the pastures. Such a decline has been very evident on the Experiment Farm in Meigs County, and the liming, reseeding and fertilizing of the pastures is producing a marked improvement on that farm.

Monroe County has been a relatively large producer of apples, and is participating in the revival of the orchard industry in the group of hilly counties in southeastern Ohio that has followed the demonstrations made by the Experiment Station in Washington County during recent years.

Throughout this quarter of the State the topography of the land is such that corn, oats and wheat cannot be grown in competition with the more level regions of the State, except in a very limited way, while this very topography is an advantage to the fruit grower, and a well cared for orchard of well selected apples is a more valuable property, acre for acre, than the best corn and wheat land in the State.

MONROE COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	25,779	26,496	25,175	27,031	24,244
White	.....	25,676	26,416	25,073	26,946	24,153
Negro	.....	103	80	102	84	90
Foreign born	.....	2,454	1,999	1,452	965	574
Rural	.....	.....	.....	.....	27,031	21,742
Urban	.....	.....	.....	.....	.....	2 502

Population of cities or towns, 1910: Wooodsfield, 2,502.

FARMS: U S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area ..... Acres	.....	.....	.....	286,720
Land in farms ..... Acres	280,943	279,647	281,464	271,577
Improved land in farms ..... Acres	193,325	208,710	214,561	201,484
Woodland in farms ..... Acres	81,680	70 937	66,903	47,118
Other unimproved land in farms ..... Acres	5,939			22,975
Total number of farms ..... Number	2,945	3,048	3,485	3,288
Area of average farm ..... Acres	95.1	91.7	80.8	82.6
Improved land per farm ..... Acres	65.4	68.5	61.6	61.6
Value of all property per farm ..... Dollars	2,649	2,845	2,485	3,136
Value of land and buildings per farm ..... Dollars	2,334	2,418	2,082	2,612
Value of land and buildings per acre ..... Dollars	24.54	26.37	25.77	31 61

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses ..... Number	5,487	5,896	6,117	5,575	6,140	4,879
Cattle ..... Number	13,584	15,369	16,447	17,288	13,836	13,037
Sheep ..... Number	19,426	38,069	28,191	44,563	26 919	11,257
Hogs ..... Number	17,040	14,238	14,327	10 844	7 311	5 895
Cattle equivalent { Total	22.817	26,502	26,816	28,404	23 399	19 631
Cattle equivalent { Per 1,000 acres	.....	.....	139	136	109	97

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn ..... Acres	18,765	18,782	19,304	18,433	17,836	16,877
Bushels	499,686	498,646	615,012	544,792	694,303	526,603
Bushels per acre	26.6	26.3	31.8	29.6	27.7	31.2
Oats ..... Acres	12,380	11,385	11,727	8,425	6,914	7,078
Bushels	192,030	216,579	221,844	164,160	115,363	139,365
Bushels per acre	14.7	19.0	18.9	19.5	16.6	19.7
Wheat ..... Acres	22,873	14,982	14,294	19,306	20,981	14,678
Bushels	245,905	111,224	132,166	199,715	237,247	155,721
Bushels per acre	10.5	7.4	9.2	10.3	11.3	10.6
Rye ..... Acres	532	1,457	1,016	319	429	267
Bushels	3,338	12,888	8,892	3,043	4.646	2,944
Bushels per acre	6.3	8.8	8.8	9.5	10.8	11.0
Meadows ..... Acres	10,622	10,575	15,075	23,824	25,535	29,583
Tons	10,372	11,956	12,650	23,591	24,094	28,721
Tons per acre	.98	1.13	.82	.99	.94	.97
Clover ..... Acres	.....	3,809	2,136	1,430	1,206	676
Tons	.....	3,341	1,528	1,368	1,269	717
Tons per acre	.....	.88	.72	.96	1.05	1.06
Pasture ..... Acres	.....	.....	67,659	100 754	108 396	113,379
Potatoes ..... Acres	.....	803	995	1,220	1,299	1,369
Bushels	.....	49,642	61,128	90,878	92,287	124,118
Bushels per acre	.....	61.8	61.4	74.7	71.0	90.6
Orchards ..... Acres	.....	4,717*	5,672	6,053	5 715	4,366
Apples ..... Bushels	.....	225 166	190,463	320,740	121 377	100,190

*3-year average.

MONTGOMERY COUNTY

Location.—Montgomery County is in the southwestern quarter of the State. Bounded on the north by Miami; on the east by Clark and Greene; on the south by Warren and Butler, and on the west by Preble. Area, 455 square miles. Organized in 1803.

Geology.—The floor of the county is limestone, chiefly the Richmond formation with small areas of the Niagara in the northern and eastern parts, and of the Point Pleasant in the southwestern corner. The rock is everywhere covered with the glacial drift. In the stream valleys this drift has been worked over and covered with the washings of the higher land adjoining.

Topography.—The topography is that of a gently rolling plain, through which the Great Miami River and its tributaries have cut their channels, that of the Miami reaching a depth of 200 feet in the southern part of the county. The drainage is through the Great Miami River, which enters the county near the northeastern corner, is joined at Dayton by Mad River coming from the northeast and Stillwater from the northwest. Twin Creek crosses the southwestern corner of the county.

Soils.—The principal soil type is the Miami silt loam, which covers the major portion of the uplands in the county, together with small areas of Clyde clay loam. The flood plain of the Mad and Miami Rivers is from 1 to several miles in width, furnishing a large area of bottom land, the high productiveness of which has contributed materially to the wealth of the county.

Agriculture.—This county was settled at an early date in the history of the State. The Miami River furnished occasional flat boat navigation in pioneer days, while the canal, opened in 1829, gave a more dependable means of transportation, so that the early settlers enjoyed better than average market facilities, and by 1850 about three-fourths of the present cultivated area was under cropping.

Hogs have been grown extensively and were fed in early days for the Cincinnati market.

Montgomery County has grown more tobacco than any other county in the State, the average annual production for the 47 years, 1863-1909, being 7,500,000 pounds, and rising to nearly 12,000,000 pounds for the last decade, grown on an average of 16,720 acres of land.

In 1903 an experiment farm was established at Germantown, in the southern part of the county, on a typical Miami silt loam soil, and experiments were begun in which corn, wheat and clover, and tobacco, wheat, and clover, have since been grown in separate rotations.

The work done on this farm has demonstrated that here, as on all the older soils of the State, phosphorus, in its more available carriers, produces an immediate and very profitable increase of crop. On this soil potassium also is needed, and may be applied with profit at the normal cost of this element. Nitrogen, which is equally needed, can be most economically furnished by the growth of clover and the use of manure; but an application of a fertilizer containing all three elements in 480 pounds of acid phosphate, 40 pounds of muriate of potash and 160 pounds of nitrate of soda per acre, divided between corn and wheat grown in rotation with clover, has increased the yields by a 13-year average of 17 bushels of corn, 11½ bushels of wheat and 1,400 pounds of hay.

There can be no question that these results might be duplicated on the great majority of Montgomery County's farms.

MONTGOMERY COUNTY STATISTICS

POPULATION; U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	64,006	78,550	100,852	130,146	163,763
White	.....	63,197	77,234	98,364	126,121	158,253
Negro	.....	809	1,310	2,478	4,000	5,481
Foreign born	.....	10,979	12,297	14,695	14,279	16,534
Rural	.....	.....	.....	.....	40,872	42,915
Urban	.....	.....	.....	.....	89,274	120,848

Population of cities or towns, 1910: Dayton, 116,577; Miamisburg, 4,271; Germantown, 1,778; West Carrollton, 1,285; Brookville, 1,187.

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area....Acres..	.....	.....	.....	291,200
Land in farms....Acres..	279,584	268,774	280,938	268,402
Improved land in farms....Acres..	224,473	229,242	234,828	230,520
Woodland in farms....Acres..	50,569	39,532	46,110	25,398
Other unimproved land in farms....Acres..	4,549			12,474
Total number of farms....Number..	3,639	3,900	4,462	4,994
Area of average farm....Acres..	76.8	68.9	63.0	53.7
Improved land per farm....Acres..	61.7	58.8	52.6	46.2
Value of all property per farm....Dollars..	7,009	5,655	5,000	7,682
Value of land and buildings per farm....Dollars..	6,485	5,141	4,458	6,893
Value of land and buildings per acre....Dollars..	84.44	74.62	70.76	128.36

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses....Number..	10,544	12,003	12,902	14,700	15,153	9,744
Cattle....Number..	19,079	19,921	18,975	20,847	17,268	16,076
Sheep....Number..	14,362	11,943	5,769	5,955	4,172	1,996
Hogs....Number..	39,321	36,087	34,396	25,868	19,616	17,013
Cattle equivalent { Total	34,991	36,727	35,894	38,729	34,800	27,721
Cattle equivalent { Per 1,000 acres	.....	.....	160	169	148	120

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn....Acres..	34,275	36,698	45,206	47,848	45,492	46,678
Bushels..	1,271,946	1,272,922	1,767,513	1,667,158	1,583,085	1,781,182
Bushels per acre..	37.1	34.2	39.1	34.7	34.7	38.2
Oats....Acres..	9,884	11,996	14,725	13,007	12,463	14,656
Bushels..	185,685	334,845	401,237	375,878	332,749	453,817
Bushels per acre..	18.8	27.9	27.3	28.9	26.7	31.0
Wheat....Acres..	29,113	37,127	35,481	45,867	43,206	36,766
Bushels..	498,661	536,849	507,159	652,363	702,763	564,754
Bushels per acre..	17.1	14.5	14.3	13.2	16.3	15.4
Rye....Acres..	1,441	1,103	623	352	433	387
Bushels..	8,876	12,511	7,872	4,167	4,846	5,739
Bushels per acre..	6.2	11.3	12.6	11.8	11.2	14.9
Meadows....Acres..	9,755	9,219	9,075	11,362	14,855	16,497
Tons..	10,234	9,821	10,015	13,780	17,220	18,969
Tons per acre..	1.05	1.07	1.10	1.21	1.17	1.15
Clover....Acres..	.....	12,825	16,975	18,089	16,398	10,896
Tons..	.....	6,366	8,255	10,962	12,897	9,886
Tons per acre..	.....	.50	.48	.61	.79	.90
Pasture....Acres..	.....	.....	22 566	25,423	18,989	28,208
Potatoes....Acres..	.....	1,205	1,765	1,776	1,667	1,055
Bushels..	.....	74,195	101,236	130,410	107,117	83,192
Bushels per acre..	.....	61.5	57.3	73.4	64.2	73.8
Orchards....Acres..	.....	5,373*	5,066	3,380	3,587	2,400
Apples....Bushels.	.....	69,835	110,232	92 098	57,731	33,529

*3-year average.

MORGAN COUNTY

Location.—Morgan County is in the southeastern quarter of the State. Bounded on the north by Muskingum; on the east by Noble and Washington; on the south by Washington and Athens, and on the west by Athens and Perry. Area, 402 square miles. Organized in 1818.

Geology.—The underlying rocks are the alternating limestones, shales and sandstones of the coal measures. The county lies entirely south of the glaciated region.

Topography.—The surface is hilly to very hilly, there being no level land within the county except the narrow valleys of the streams. The Muskingum River, flowing southeasterly near the middle of the county, is the chief drainage channel. Meigs Creek, a tributary of the Muskingum, drains the eastern townships, while the western side of the county is drained by the headwaters of Federal and Sunday Creeks, tributaries of the Hocking River.

Soils.—Limestone has contributed more largely to the formation of the soils of Morgan County than is the case with several of the southeastern counties, giving considerable areas of the Brooke, a limestone soil, intermingled with the Dekalb soils that are the leading types in this region.

Agriculture.—The picture of Morgan County's agriculture is one of steadily diminishing areas in the grain crops, and similarly diminishing numbers of livestock; practically level rates of yield of corn and oats, and also of wheat until the last 20 years, and a steady increase in the area given to the grasses.

The upturn in yield of wheat during the last two decades is no doubt due to the use of commercial fertilizers, which amounted annually to 1,773,000 pounds during the 'nineties and 2,127,000 pounds during the following 10 years. The amount used during the 'eighties was probably about half that used during the 'nineties.

The increase in area of the grasses, coincident with a decrease in the number of animals, may mean larger sales of hay, or diminishing production of the pastures and meadows. Probably both influences are at work. Even when the hay tonnage remains apparently uniform it sometimes happens that weeds and inferior grasses are taking the place of the better grasses, and this is sure to happen when fertilization is neglected.

MORGAN COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	20,363	20,074	19,143	17,905	16,097
White	.....	20 127	19,881	18,983	17,774	15,950
Negro	.....	236	193	160	131	147
Foreign born	.....	490	341	275	160	181
Rural	.....	.....	.....	.....	17,905	16,097
Urban	.....	.....	.....	.....	.....	.....

Population of cities or towns, 1910; McConnelsville, 1,831.

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area. ..... Acres..	.....	.....	.....	257,280
Land in farms. Acres..	284,000	252,697	260,760	254,407
Improved land in farms. Acres..	213,793	200,655	212,822	203,300
Woodland in farms. Acres..	61,039	52,042	47,938	33,813
Other unimproved land in farms. Acres..	9,168			17,294
Total number of farms. Number..	2,419	2,519	2,741	2,653
Area of average farm. Acres..	117.4	100.3	95.1	95.9
Improved land per farm. Acres..	88.4	79.7	77.6	76.6
Value of all property per farm. Dollars..	4,330	3,687	2,896	3,746
Value of land and buildings per farm . Dollars..	3,834	3,158	2,359	3,018
Value of land and buildings per acre. Dollars..	32.66	31.49	24.81	31.47

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Horses. Number..	6,556	6,999	6,687	5,926	6,236	4,081
Cattle. Number..	16,127	17,273	15,887	14,520	14,046	11,917
Sheep. Number..	39,727	70,788	66,285	108,285	76,209	61,815
Hogs. Number..	22,452	17,940	14,641	8,870	7,138	4,304
Cattle equivalent { Total	28,901	33,145	30,667	32,162	28,617	22,610
Cattle equivalent { Per 1,000 acres	.....	.....	143	160	134	111

FARM CROPS: Ten-year averages: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Corn. Acres..	19,879	19,628	18,538	15,918	16,359	14,616
Bushels..	627,230	567,883	658,515	541,438	546,818	520,395
Bushels per acre..	31.5	29.6	35.5	33.7	33.4	35.6
Oats. Acres..	7,810	5,082	4,543	2,572	2,848	2,703
Bushels..	79,668	103,393	78,915	50,830	52,760	58,367
Bushels per acre..	10.2	20.3	17.4	19.8	18.5	21.6
Wheat. Acres..	29,155	17,561	15,501	16,869	15,203	10,647
Bushels..	338,820	159,724	165,944	186,980	199,264	143,584
Bushels per acre..	11.6	9.1	10.7	11.1	13.1	13.5
Rye. Acres..	197	338	165	104	223	117
Bushels..	1,227	2,872	1,457	947	1,730	1,534
Bushels per acre..	6.2	8.5	8.8	9.1	7.7	13.1
Meadows. Acres..	13,570	14,524	14,411	22,512	25,476	27,243
Tons..	16,608	15,884	14,507	25,273	25,489	29,240
Tons per acre..	1.23	1.09	1.00	1.12	1.00	1.07
Clover. Acres..	.....	3,583	2,982	2,141	2,184	1,785
Tons..	.....	3,985	2,648	2,343	2,593	2,272
Tons per acre..	.....	1.11	.89	1.10	1.19	1.27
Pasture. Acres..	.....	.....	79,448	118,035	129,698	122,587
Potatoes. Acres..	.....	562	637	740	658	460
Bushels..	.....	42,235	44,910	50,585	49,534	41,554
Bushels per acre..	.....	75.1	70.4	68.3	75.2	90.4
Orchards. Acres..	.....	3,968	4,810	5,562	5,318	3,577
Apples. Bushels..	.....	168,137	86 303	206,215	92,902	47,233

MORROW COUNTY

Location.—Morrow County is in the northwestern quarter of the State near the middle. Bounded on the north by Marion, Crawford and Richland; on the east by Richland and Knox; on the south by Knox and Delaware; on the west by Delaware and Marion. Area, 403 square miles. Organized in 1848.

Geology.—The eastern two-thirds of the county is underlaid with the shales and sandstones of the Waverly; the remainder with the Huron shale. The entire surface is covered with glacial drift.

Topography.—The surface of the county is rolling, excepting a small area of level land in the northern part. The drainage is chiefly through the headwaters of the Olentangy and Alum Creeks, which flow southward into the Scioto. The eastern side of the county drains into the Muskingum and some of the tributaries of the Sandusky rise in the northern townships.

Soils.—The soils of the county have been largely modified by the underlying rock; the western third is covered with the Miami silt loam, the middle with Volusia, which shades off into the Wooster silt loam on the eastern side.

Agriculture.—For 30 years corn occupied as much land as all the small grains combined, but latterly there has been a greater increase in the area given to wheat and oats than in that given to corn. The yields of corn and oats per acre have remained at a standstill for 40 years. That of wheat has shown a little increase, probably due to the use of commercial fertilizers, which has amounted to about 80 pounds for each acre sown in wheat during the 'nineties and 180 pounds during the last decade. The apparent downward trend in area and yield during the last decade was due to the Hessian fly attacks of 1900 and 1901; if we except these years the average of the remainder of the decade is 17 bushels.

In common with the State generally, the livestock of Morrow County has diminished rapidly in numbers during the last 30 years, the total reduction amounting to the equivalent of 12,000 cattle. This county is on the western edge of the sheep district of the State and the largest reduction has been in this class of livestock.

MORROW COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total		18,583	19 072	18,120	17,879	16,815
White		18,440	18,928	18 005	17,823	16,759
Negro		143	143	115	56	56
Foreign born		663	615	454	314	200
Rural					17,879	16,815
Urban						

Population of cities or towns, 1910: Mount Gilead, 1,673; Cardington, 1,349.

FARMS: U. S. Census

FARMS: U. S. Census	1880	1890	1900	1910
Approximate land area—Acres				257,920
Land in farms—Acres	263,843	243,288	248,403	249,236
Improved land in farms—Acres	201,396	200,085	194,642	202,202
Woodland in farms—Acres	56,614	43,203	53,761	35,597
Other unimproved land in farms—Acres	5,833			11,437
Total number of farms—Number	2,771	2,735	2,728	2,743
Area of average farm—Acres	95.2	89.0	91.1	90.9
Improved land per farm—Acres	72.7	73.2	71.3	73.7
Value of all property per farm—Dollars	5,827	4,387	4,124	6,796
Value of land and buildings per farm—Dollars	2,120	3,718	3,438	5,662
Value of land and buildings per acre—Dollars	2.31	41.78	37.74	62.29

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses—Number	7,640	7,883	8,038	7,724	8,880	6,752
Cattle—Number	20,319	17,638	17,063	15,192	12,470	13,374
Sheep—Number	79 902	111,377	112,952	118,941	75,484	59,740
Hogs—Number	24,889	19,706	16,501	13,661	12,609	12,124
Cattle equivalent—Total	38,438	38,629	38,046	36,176	30 159	27,312
Cattle equivalent—Per 1,000 acres			189	181	155	135

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	89-1099	1900-09
Corn—Acres	20,474	19,351	24,672	23,906	26,048	26,690
Corn—Bushels	628,190	588,055	858,157	795,230	869,946	914,100
Corn—Bushels per acre	31.4	30.3	34.7	33.1	33.3	34.2
Oats—Acres	8,354	9,061	12,530	12,795	14,627	15,332
Oats—Bushels	171,564	255,033	407,127	411 082	452,583	511,637
Oats—Bushels per acre	20.5	28.2	32.5	32.1	31.0	33.4
Wheat—Acres	11,582	9,782	12,288	18,305	17.112	16,502
Wheat—Bushels	131,801	110,578	157,882	229.426	256,224	234.259
Wheat—Bushels per acre	11.4	11.3	12.8	12.5	15.0	14.2
Rye—Acres	524	822	452	305	674	577
Rye—Bushels	4,361	9,014	4,685	2,987	7,202	7,492
Rye—Bushels per acre	8.3	11.0	10.4	9.8	10.8	13.0
Meadows—Acres	21,166	24,231	24,178	24,512	30,852	26,978
Meadows—Tons	30,854	33,260	27,071	33,624	37,446	35,081
Meadows—Tons per acre	1.45	1.37	1.12	1.18	1.21	1.30
Clover—Acres		3,583	5,567	5,627	7,545	10,876
Clover—Tons		3,985	,296	7,066	8,996	15,520
Clover—Tons per acre		1.11	1.13	1.25	1.19	1.42
Pasture—Acres			65 526	80,429	75,674	84,627
Potatoes—Acres		797	883	946	1,016	1,041
Potatoes—Bushels		67,315	62,672	76,371	73,387	96,372
Potatoes—Bushels per acre		84 4	71.0	80.7	72.2	92.6
Orchards—Acres		4,731	5,116	4,759	4,350	2,737
Apples—Bushels		242 804	197 047	157,553	100 999	83,391

*3-year average.

MUSKINGUM COUNTY

Location.—Muskingum County is in the southeastern quarter of the State. Bounded on the north by Coshocton; on the east by Guernsey and Noble; on the south by Morgan and Perry, and on the west by Perry and Licking. Area, 664 square miles. Organized in 1804.

Geology.—The rocks exposed in different parts of the county include the entire range of the coal measures, giving a greater vertical range of strata than is found in any other county in the State. Parts of the western townships are within the glaciated region.

Topography.—The general topography is rolling to hilly, with small areas of very steep hills, while the broad valleys of the streams, and especially of an ancient river which once crossed the northwestern corner of the county, give some level land. The drainage is by the Muskingum River, flowing through the middle of the county from north to south, the Licking River, coming from the northwest and joining the Muskingum at Zanesville, and numerous smaller streams, all tributaries of the Muskingum.

Soils.—The Dekalb series constitute the predominant soils of the county. Small areas of the Brooke clay loam are found in the southeastern corner where there are outcrops of limestone, and the river valleys are occupied with alluvial and terrace soils.

Agriculture.—Muskingum belongs to the group of counties that have made sheep their leading livestock, but the number kept has diminished by nearly one-half during the last 30 years, the total reduction in livestock during this period amounting to the equivalent of 20,000 cattle.

The purchase of commercial fertilizers has amounted to an annual average of 2,264,000 pounds for the 'nineties and 3,165,000 pounds for the last decade, and the wheat yield shows an increase of about 2 bushels per acre for this 20-year period, although the average yield is still only about 13 bushels per acre and the area in wheat was less than half as great during the last decade as during the 'fifties. The yield of corn has averaged 35 bushels per acre for the 60 years, with but little variation from that average, nor from the average area in this crop.

The area in meadows has steadily increased, although the yield was greater during the 'fifties and 'sixties than it has ever been since.

MUSKINGUM COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	44,886	49,774	51,210	*53,185	57 483
White	.....	43,719	48,444	49,991	51,929	55,787
Negro	.....	1,166	1,329	1,211	1,255	1,686
Foreign born	.....	3,501	3,200	2,671	1,993	2,226
Rural	.....	.....	.....	.....	29,647	29,462
Urban	.....	.....	.....	.....	23,538	28,026

Population of cities or towns, 1910: Zanesville, 28,026; Dresden, 1,549; Roseville, (Muskingum and Perry) 2,113.

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area, Acres.	.....	.....	.....	422,960
Land in farms, Acres	424,567	395,542	405,481	3 6,442
Improved land in farms, Acres	331,274	321,243	333,865	324,520
Woodland in farms, Acres	90,506	74,299	71,616	90,004
Other unimproved land in farms, Acres	2,787			01,918
Total number of farms, Number	3,609	3,630	3,974	23,861
Area of average farm, Acres	117.6	109 0	102.0	122.7
Improved land per farm, Acres	91.8	88.5	84.0	54.0
Value of all property per farm, Dollars	4,883	4,241	3,187	24,663
Value of land and buildings per farm, Dollars	4,333	3,699	2,640	83,875
Value of land and buildings per acre, Dollars	36.85	33.94	25.88	37.83

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses, Number	12,307	12,005	11,722	10,782	10,553	6,717
Cattle, Number	29,090	29,691	29,224	26,870	24,194	21,077
Sheep, Number	86,165	147,287	135,965	152,832	103,908	81,817
Hogs, Number	38,994	31,938	25,793	17,087	13,848	9,256
Cattle equivalent, Total	53,913	59,619	57,122	54,644	46,523	36,901
Cattle equivalent, Per 1,000 acres	.....	.....	172	170	139	114

Farm crops: Ten-year average production: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn, Acres	23,810	31,025	34,107	30,775	30,242	26,957
Corn, Bushels	1,155,162	1,031,845	1,304,857	1,064,694	1,064,749	936,063
Corn, Bushels per acre	34.2	33.4	38.3	34.4	35.2	34.7
Oats, Acres	14,497	9,641	10,091	6,555	7,014	6,611
Oats, Bushels	186,074	197,769	213,050	147,916	144,680	163,898
Oats, Bushels per acre	12.9	21.9	21.1	22.6	20.6	24.8
Wheat, Acres	45,027	27,056	24,324	31,304	26,776	20,575
Wheat, Bushels	509,563	250,782	266,300	359,258	357,571	265,176
Wheat, Bushels per acre	11.3	9.3	10.9	11.5	13.3	12.9
Rye, Acres	2,381	1,298	695	568	775	627
Rye, Bushels	18,367	12,067	6,510	5,337	6,516	6,451
Rye, Bushels per acre	7.7	9.3	9.4	9.4	8.4	10.3
Meadows, Acres	21,209	22,436	29,487	39,536	41,399	44,799
Meadows, Tons	23,989	27,098	29,306	41,728	41,417	46,114
Meadows, Tons per acre	1.18	1.25	.99	1.06	1.00	1.03
Clover, Acres	.....	5,977	3,765	3,468	2,879	3,653
Clover, Tons	.....	6,856	3,117	3,071	3,078	4,141
Clover, Tons per acre	.....	1.15	.83	.89	1.07	1.13
Pasture, Acres	.....	.....	151,318	203,668	196,546	176,081
Potatoes, Acres	.....	1,443	1,441	1,620	1,455	976
Potatoes, Bushels	.....	96,497	108,286	111,046	95,528	99,509
Potatoes, Bushels per acre	.....	66.8	75.0	68.5	65.6	102.0
Orchards, Acres	.....	5,744	6,694	7,297	7,225	5,620
Orchards, Apples, Bushels	.....	128,758	166,357	230,853	131,967	101.283

NOBLE COUNTY

Location.—Noble County is in the southeastern quarter of the State. Bounded on the north by Guernsey; on the east by Belmont and Monroe; on the south by Washington and Morgan, and on the west by Morgan, Muskingum and Guernsey. Area, 399 square miles. Organized in 1851.

Geology.—The county lies within the coal measures and its surface rocks comprise almost the entire range of sandstones, shales and limestones belonging to this formation.

Topography.—The surface of the county is hilly, there being no level land except a few narrow stream valleys. The southwestern part of the county is drained by small streams which flow southward into the lower Muskingum and the northeastern part by Buffalo and Seneca Creeks, headwaters of Wills Creek, which flows northward into the Upper Muskingum. Duck Creek, crossing the county near the middle from northwest to southeast is the principal drainage channel.

Soils.—The soils are chiefly the Meigs, Brooke and Dekalb soils, with a few narrow belts of alluvium in the valleys of Duck, Buffalo and Seneca Creeks.

Agriculture.—The agricultural picture of the county is one of diminishing areas in the cultivated crops, with stationary yields at a low point; decreasing numbers of livestock, and increasing areas in meadows and pastures. Evidently the quality, as well as the quantity of the yield of the grass lands is deteriorating.

The purchase of commercial fertilizers has averaged 782,684 pounds and 1,193,361 pounds annually for the last two decades, while the livestock has fallen off by the equivalent of nearly 10,000 cattle. This number of cattle should produce 50,000 tons of manure during the 6 months of winter feeding, which should contain 500,000 pounds of nitrogen, 300,000 pounds of phosphoric acid and 500,000 pounds of potash. To offset these fertilizing elements which were sold off the farm instead of being fed to livestock, Noble County farmers bought in fertilizers during the last decade about 12,000 pounds of nitrogen, 120,000 pounds of phosphoric acid and 12,000 pounds of potash.

The area in clover during this decade was 1,126 acres—one acre in clover against 60 acres in other crops.

NOBLE COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1919
Total	.....	19,949	21,138	20,753	19,466	18,601
White	.....	19,864	21,044	20,716	19,428	18,556
Negro	.....	85	94	37	37	44
Foreign born	.....	664	546	345	244	591
Rural	.....	.....	.....	.....	19,466	18,601
Urban	.....	.....	.....	.....	.....	.....

Population of cities or towns, 1919: Caldwell, 1,430.

FARMS: U. S. Census

Farms: U. S. Census		1880	1890	1900	1910
Approximate land area	Acres	.....	.....	.....	255,360
Land in farms	Acres	260,896	243,490	248,495	242,325
Improved land in farms	Acres	198,695	201,862	214,315	210,997
Woodland in farms	Acres	58,492	} 41,628	34,180	{ 21,913
Other unimproved land in farms	Acres	3,709	}		{ 9,415
Total number of farms	Number	2,432	2,530	2,826	2,713
Area of average farm	Acres	107.3	96.2	87.9	89.3
Improved land per farm	Acres	81.7	78.9	75.8	77.8
Value of all property per farm	Dollars	4,243	8,786	2,896	4,076
Value of land and buildings per farm	Dollars	3,777	3,196	2,373	3,348
Value of land and buildings per acre	Dollars	35.20	33.22	26.00	37.49

LIVESTOCK: Ten-year average numbers: Ohio statistics

		1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses	Number	6,499	7,164	6,029	5,622	5,327	4,118
Cattle	Number	15,579	18,124	16,708	16,296	13,473	13,845
Sheep	Number	37,042	56,238	53,457	103,789	61,234	52,090
Hogs	Number	20,060	17,333	16,077	11,517	8,574	5,393
Cattle equivalent	Total	27,788	32,645	29,690	33,449	25,781	23,711
	Per 1,000 acres	.....	.....	149	166	120	112

FARM CROPS: Ten-year averages: Ohio statistics

		1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn	Acres	20,497	20,545	22,075	19,411	17,724	15,439
	Bushels	618,638	675,711	844,050	673,718	566,648	540,820
	Bushels per acre	30.2	32.7	38.2	34.5	31.9	35.7
Oats	Acres	9,328	7,650	7,849	4,464	3,921	3,149
	Bushels	130,333	151,847	144,406	93,869	72,612	67,084
	Bushels per acre	13.9	19.9	18.4	21.0	18.5	21.4
Wheat	Acres	19,130	14,915	14,605	16,701	16,085	11,229
	Bushels	197,467	127,697	137,990	176,336	184,550	131,727
	Bushels per acre	10.3	8.3	9.4	10.6	11.5	11.7
Rye	Acre	201*	523	262	114	153	112
	Bushels	1,141	5,399	2,452	1,115	1,477	1,027
	Bushels per acre	5.7	10.3	9.4	9.8	9.7	9.2
Meadows	Acres	12,354	14,291	16,282	24,539	25,916	30,043
	Tons	14,383	14,789	17,577	25,788	25,586	31,712
	Tons per acre	1.16	1.03	1.08	1.05	.99	1.05
Clover	Acres	.....	1,307	1,840	653	1,195	1,126
	Tons	.....	856	1,169	715	1,272	1,368
	Tons per acre	.....	.66	.64	1.10	1.06	1.21
Pasture	Acres	.....	.....	87,053	124,694	135,036	145,898
Potatoes	Acres	.....	505	604	712	730	639
	Bushels	.....	33,659	43,487	48,574	49,952	60,569
	Bushels per acre	.....	66.6	72.0	67.7	68.4	94.8
Orchards	Acres	.....	3,647†	4,568	4,583	4,632	3 520
Apples	Bushels	.....	218,976	138,141	199 579	86,808	67,612

*2-year average. †3-year average.

OTTAWA COUNTY

Location.—Ottawa County is in the northwestern quarter of the State, on the lake shore. Bounded on the north by Lucas County and Lake Erie; on the east by the Lake; on the south by Sandusky Bay and Sandusky County; on the west by Sandusky and Wood Counties. The county includes Catawba Island, which is really a peninsula, together with Put-in Bay, Middle Bass, and North Bass and several smaller islands. Area, 270 square miles. Organized in 1840.

Geology.—Marblehead promontory is a mass of Corniferous limestone. Going westward one crosses the narrow band of Oriskany sandstone about 2 miles from the point, then several miles of Waterlime, which also covers the islands, then Niagara and Waterlime again. A deposit of gypsum is worked on the peninsula. The entire county is covered with glacial drift.

Topography.—The surface is flat, lying less than 50 feet above the lake. The drainage is through the Portage River, which crosses the southern range of townships from west to east, and Toussaint Creek, Turtle Creek and Crane Creek, crossing the northern range of townships.

Soils.—The predominant soil type is the dark Clyde clay loam. On the Marblehead promontory the soil is a thin sheet of limestone residium, and the upper valley of the Portage River has a sandy, terrace soil.

Agriculture.—On Catawba Island and along the Lake Shore, in a belt 2 to 3 miles wide, the striking agricultural feature of the county is the peach orchards; this county producing nearly one-fourth of all the peaches grown in the State. Until the last decade wheat exceeded corn in area, and the yield of wheat per acre has been relatively larger than that of corn.

The culture of the sugarbeet is being introduced in the county, 2,650 acres being given to this crop in 1916.

The number of livestock has been relatively well maintained, and but small use is made of commercial fertilizers.

OTTAWA COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	13,364	19 762	21,974	22 213	22,360
White	.....	13 272	19 726	21,926	22,171	22,328
Negro	.....	92	33	47	40	31
Foreign born	.....	3,475	5,027	5,280	4,599	4 301
Rural	.....	.....	.....	.....	22,213	19 353
Urban	.....	.....	.....	.....	.....	3,007

Population of cities or towns, 1910; Port Clinton, 3,007; Oak Harbor, 1,559; Marblehead, 1.172.

FARMS: U. S. Census

Farms: U. S. census	1880	1890	1900	1910
Approximate land area, Acres	.....	.....	.....	172,800
Land in farms, Acres	123,850	132,142	158,472	146,887
Improved land in farms, Acres	73,182	98,318	121,318	120,958
Woodland in farms, Acres	58,492	33,824	37,154	14,026
Other unimproved land in farms, Acres	3,709			11,903
Total number of farms, Number	1,799	2,096	2,367	2,216
Area of average farm, Acres	68.8	63.0	66 9	66.3
Improved land per farm, Acres	40.7	46.9	51.3	54.6
Value of all property per farm, Dollars	5,792	4,648	5,318	8 366
Value of land and buildings per farm, Dollars	5,106	4,136	4,800	7 529
Value of land and buildings per acre, Dollars	74.22	65.65	72.40	113.56

LIVESTOCK: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses, Number	1,471	2,768	4,145	5,158	5,476	4,469
Cattle, Number	4,169	5,433	7,823	9,113	8,948	7,575
Sheep, Number	12,231	16,405	17,795	13,955	8,501	4,601
Hogs, Number	5,993	7,703	9,600	10,876	10,542	6,112
Cattle equivalent, Total	7,462	10,612	14,708	16,754	16,328	13,115
Cattle equivalent, Per 1,000 acres	.....	.....	201	170	135	108

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn, Acres	3,397	5,113	9,983	13,491	17,976	22,268
Corn, Bushels	110,409	155,216	406,889	479,937	631,095	780,677
Corn, Bushels per acre	32.5	29.8	41.2	35.6	35.1	35.1
Oats, Acres	872	1,669	3,909	4,297	8,465	13,610
Oats, Bushels	34,554	46,460	124,440	143,981	221,903	454,726
Oats, Bushels per acre	39.6	27.8	31.8	33.5	26.2	33.4
Wheat, Acres	2,534	4,966	9,127	15,493	18,551	12,253
Wheat, Bushels	37,117	59,824	160,173	240,207	270,847	210,094
Wheat, Bushels per acre	14.6	12.0	17.5	15.5	14.6	17.7
Rye, Acres	30.5	754	145	1,655	644	464
Rye, Bushels	254	6,664	2,786	30,432	10,556	8,565
Rye, Bushels per acre	8.3	8.8	19.2	18.3	16.4	18.5
Meadows, Acres	3,872	4,972	6,704	6,704	11,329	13,830
Meadows, Tons	6,406	8,806	9,360	10,608	14,671	18,519
Meadows, Tons per acre	1.65	1.77	1.40	1.58	1.30	1.34
Clover, Acres	.....	964	1,756	4,780	3,785	5,114
Clover, Tons	.....	1,294	2,458	6,928	4,631	6,886
Clover, Tons per acre	.....	1.34	1.40	1.45	1.22	1.34
Pasture, Acres	.....	.....	.....	12,174	14,595	16,599	22,500
Potatoes, Acres	.....	.....	483	755	965	831	736
Potatoes, Bushels	.....	38,289	57,225	68,275	38,322	53,912
Potatoes, Bushels per acre	.....	79.2	75.8	70.8	46.0	73.2
Orchards, Acres	.....	1,200	1,701	3,651	6,523	.....
Apples, Bushels	.....	22 050	45,075	65,589	36,441	46,425

PAULDING COUNTY

Location.—Paulding County is in the northwestern quarter of the State, on the Indiana line. Bounded on the north by Defiance; on the east by Defiance and Putnam; on the south by Putnam and Van Wert, and on the west by Allen County, Indiana. Area, 413 square miles. Organized in 1820.

Geology.—The floor of the county is Waterlime over the southern two-thirds, changing to Oriskany, Corniferous and Hamilton in succession over the northern third.

Topography.—The surface of the county is a flat plain, broken only by the shallow channels of the sluggish streams. The Maumee winds across the northwestern corner of the county, and the Auglaize crosses the northeastern corner, flowing northward into the Maumee. Blue Creek, Crooked Creek and smaller streams, about 5 miles apart, flow northeastwardly across the county into the Auglaize.

Soils.—The rock floor has everywhere been covered by glacial drift, and this has been re-worked and waterlaid by the ancient extension of Lake Erie, which at one time covered the county. The marsh vegetation which occupied the land as the water slowly receded gave rise to a dark, heavy soil, now called Fulton clay.

Agriculture.—Up to the beginning of the last quarter of the nineteenth century the county was covered by an almost unbroken forest, consisting largely of elm and other semi-aquatic timber, in which deer, bears and wolves were still occasionally found. With the discovery of new uses for such timber and improved methods for working it, mills were brought in and the timber was cleared away, while amendments to the drainage laws of the State made it possible to drain the land through county organization, and during the last three decades the improved land of the county increased from 94,000 acres in 1890 to 189,000 acres in 1900, and 220,000 acres in 1910.

Corn is the principal crop of the county, occupying more land than all the small grains combined, and reaching a relatively large yield per acre. Wheat does well when the normal conditions are favorable, but is so liable to winter-killing on flat land that there has been considerable shifting to oats during the last decade.

The production of sugarbeets has attained considerable prominence in the county during recent years. A beet sugar factory is located at Paulding.

An experiment farm was located in Paulding County in 1911, on which the culture of the sugarbeet is one of the leading lines of investigation.

The results of the fertility studies conducted in this farm indicate that more thorough drainage is the most urgent requirement of the Paulding County soil.

Paulding is one of the very few counties in the State that show steady increase in the yield per acre of the different crops and in the value of land.

PAULDING COUNTY STATISTICS

POPULATION; U. S. Census

	1860	1870	1880	1890	1900	1910
Total		8,544	13,485	25,932	27,528	22,730
White		8,069	12,838	25,047	26,758	22,228
Negro		475	647	867	766	502
Foreign born		654	743	1,095	933	675
Rural					27,528	22,730
Urban						

Population of cities or towns, 1910: Paulding, 2,081; Payne, 1,207, Antwerp, 1,187.

FARMS U. S. Census

Farms U. S. Census	1880	1890	1900	1910
Approximate land area—Acres				264,320
Land in farms—Acres	132,674	168,570	248,353	255,609
Improved land in farms—Acres	59,400	94,094	189,058	220,573
Woodland in farms—Acres	70,653	74,476	59,245	26,498
Other unimproved land in farms—Acres	2,261			8,538
Total number of farms—Number	1,650	2,492	3,783	2,840
Area of average farm—Acres	80.4	67.6	65.6	90.0
Improved land per farm—Acres	36.0	37.8	50.0	77.7
Value of all property per farm—Dollars	1,998	2,726	2,936	9,918
Value of land and buildings per farm—Dollars	1,700	2,369	2,514	8,936
Value of land and buildings per acre—Dollars	21.14	35.04	38.32	99.29

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses—Number	668	1,870	3,256	4,262	5,353	5,995
Cattle—Number	2,632	5,537	7,382	9,289	6,625	7,519
Sheep—Number	714	5,132	5,471	6,417	6,127	7,814
Hogs—Number	4,704	7,245	7,247	8,152	8,588	12,086
Cattle equivalent—Total	3,842	8,645	11,910	15,008	13,450	15,504
Cattle equivalent—Per 1,000 acres			200	160	71	70

FARM CROPS: Ten-year average: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn—Acres	2,810	4,690	9,656	13,565	32,121	46,710
Corn—Bushels	89,353	137,355	272,976	425,228	1,222,895	1,801,144
Corn—Bushels per acre	31.8	28.9	29.3	31.4	38.1	38.6
Oats—Acres	345	861	3,026	4,248	9,013	31,603
Oats—Bushels	4,624	16,933	79,515	120,499	295,947	1,125,964
Oats—Bushels per acre	13.4	19.7	26.2	28.3	32.9	35.6
Wheat—Acres	1,208	3,493	5,805	11,772	16,952	13,101
Wheat—Bushels	13,363	38,203	74,208	145,890	218,213	215,002
Wheat—Bushels per acre	11.1	10.9	12.8	12.5	12.9	16.4
Rye—Acres	159	88	163	227	1,170	1,855
Rye—Bushels	1,474	951	199	3,512	10,215	34,312
Rye—Bushels per acre	9.2	10.8	12.2	15.5	8.8	18.5
Meadows—Acres	1,777	2,919	4,480	8,025	13,013	17,554
Meadows—Tons	2,250	3,491	6,260	9,629	13,827	24,075
Meadows—Tons per acre	1.26	1.20	1.40	1.20	1.06	1.37
Clover—Acres		602	1,036	3,187	4,382	7,453
Clover—Tons		638	1,158	2,704	3,934	8,973
Clover—Tons per acre		1.06	1.12	.85	.90	1.20
Pasture—Acres			2,199	3,913	7,963	22,404
Potatoes—Acres		247	586	630	718	466
Potatoes—Bushels		18,849	32,356	43,230	60,928	36,934
Potatoes—Bushels per acre		76.2	60.3	68.6	84.8	79.2
Orchards—Acres		810	1,269	1,864	2,040	1,608
Apples—Bushels		14,515	21,205	39,087	34,490	34,174

PERRY COUNTY

Location.—Perry County is in the southeastern quarter of the State. Bounded on the north by Licking and Muskingum; on the east by Muskingum and Morgan; on the south by Athens and Hocking, and on the west by Hocking and Fairfield. Area, 399 square miles. Organized in 1817.

Geology.—The western range of townships lie wholly or in part over the upper strata of the Waverly; the remainder of the county is underlaid with the coal measures. The northwestern half of the county has been overrun by the ancient glaciers.

Topography.—The surface is hilly, the only level land being in the stream valleys. The western and southern parts of the county drain into the Hocking River, through Little Rush Creek and smaller streams; the northern part into the Muskingum, through the Jonathan. The canal reservoir known as Buckeye Lake is located at the junction of Perry, Licking and Fairfield Counties.

Soils.—The soils overlying the Waverly in the northeastern corner of the county are classed as Volusia and Wooster silt loams. Those of the remainder of the county belong to the Dekalb series, excepting the bottoms and terraces of the valleys and a few small areas of black land in the northeastern corner.

Agriculture.—Corn and the small grains have been grown in nearly equal total areas, and all show a slight increase in yield per acre during the last two decades, during which the purchase of fertilizers has averaged 2,603,000 and 3,846,000 pounds, respectively; or the equivalent, during the last decade, of 280 pounds for every acre sown in wheat. Evidently the corn crop has received part of the fertilizers. As an offset against this purchase of fertilizers the livestock of the county has diminished since the 'sixties by the equivalent of 13,000 cattle.

It is evident, however, that crop yields were at a low point when livestock was at the highest, showing that livestock may be so handled as to be of but little benefit, if not an actual detriment to the land. The poaching of the land by permitting cattle to run over it when wet may more than counteract any benefit from their manure and there can be no doubt that the Dekalb soils of southeastern Ohio have suffered great injury in this way; the sheltered valleys have been to a large extent relied upon for winter protection for the cattle, and they have been allowed to range over the cornfields and meadows through the winter and early spring to glean the cornstalks and aftermath.

PERRY COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	18,453	28,218	31,151	31,841	35,396
White	.....	18,366	28,127	30,586	31,285	34,832
Negro	.....	80	91	565	555	563
Foreign born	.....	748	2 929	3,686	2,793	2,572
Rural	.....	.....	.....	.....	28,875	29,809
Urban	.....	.....	.....	.....	2,966	5,587

Population of cities or towns, 1910: Crooksville, 3,028; New Lexington, 2,559; Shawnee, 2,280; New Straightsville, 2,242; Corning, 1,564; Somerset, 1,286; Roseville, 2,113. (Perry and Muskingum)

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area, Acres	.....	.....	.....	255,360
Land in farms, Acres	250,147	224,252	227,242	225,685
Improved land in farms, Acres	201,017	180,166	182,188	172,875
Woodland in farms, Acres	47,543	44,086	45,054	32,734
Other unimproved land in farms, Acres	1,587			20,076
Total number of farms, Number	2,029	2,179	2,356	2,414
Area of average farm, Acres	123.3	102.9	96.5	93.5
Improved land per farm, Acres	99.1	82.7	77.5	71.6
Value of all property per farm, Dollars	.....	3,591	3,147	3,978
Value of land and buildings per farm, Dollars	4,374	3,065	2,581	3,257
Value of land and buildings per acre, Dollars	35.47	29.79	26.75	34.83

LIVESTOCK: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses, Number	6,912	6,482	5,722	5,421	6,133	4,776
Cattle, Number	17,239	17,712	15,833	13,043	13,894	13,139
Sheep, Number	49,338	82.027	66,905	56,550	37,815	26,329
Hogs, Number	25,085	18,334	13 291	9 531	9,288	8,143
Cattle equivalent, Total	31,593	34,230	29,575	25,072	24,737	21,362
Cattle equivalent, Per 1,000 acres	.....	.....	147	139	136	124

FARM CROPS: Ten-year averages

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn, Acres	20,014	18,451	19,680	16,211	17,402	16,719
Corn, Bushels	583,952	586,835	674,724	508,272	626,201	600,892
Corn, Bushels per acre	29.1	31.6	34.2	31.3	35.9	36.0
Oats, Acres	4,474	5,258	4,720	1,984	1,854	2,893
Oats, Bushels	73,404	107,085	80,241	39,556	37,016	79,489
Oats, Bushels per acre	16.4	20.4	17.0	19.9	20.0	27.5
Wheat, Acres	28,228	17,862	15,337	15,695	16,469	13,945
Wheat, Bushels	305,469	167,797	151,129	185,116	246,087	184,182
Wheat, Bushels per acre	10.8	9.4	9.8	11.8	14.9	13.2
Rye, Acres	658	754	431	246	269	299
Rye, Bushels	3,624	6,664	3,835	2,413	1,534	3,956
Rye, Bushels per acre	5.5	8.8	8.9	9.8	5.7	13.2
Meadows, Acres	13,012	15,273	16,459	21,116	22,822	25,029
Meadows, Tons	14,077	16,589	16,657	22,226	22,386	25,998
Meadows, Tons per acre	1.08	1.09	1.01	1.05	.97	1.03
Clover, Acres	.....	1,719	1,657	1,286	2,727	4,371
Clover, Tons	.....	1,110	1,198	1,378	2,766	5,218
Clover, Tons per acre	.....	.65	.72	1.07	1.01	1.19
Pasture, Acres	.....	.....	91,730	105,188	104,022	89,649
Potatoes, Acres	.....	636	881	850	850	755
Potatoes, Bushels	.....	40,497	60,139	56,412	55,649	53,805
Potatoes, Bushels per acre	.....	63.6	68.3	66.3	65.6	71.3
Orchards, Acres	.....	3,786	3,920	3 459	3,382	2,773
Apples, Bushels	.....	145 819	117 985	132 333	64,059	82,146

PICKAWAY COUNTY

Location.—Pickaway County is in the southwestern quarter, near the middle of the State. Bounded on the north by Franklin; on the east by Fairfield and Hocking; on the south by Ross and on the west by Fayette and Madison. Area, 490 square miles. Organized in 1810.

Geology.—The Waverly rocks occupy the southeastern townships of the county and the eastern edge of the townships north of it; the middle and southwestern parts of the county lie over the belt of Huron shale which crosses the State from the lake to the Ohio River, and the northwestern quarter is underlaid with the Corniferous limestone. The entire county is covered with glacial drift.

Topography.—The eastern townships and the banks of the streams are hilly, but the greater part of the county is level to gently rolling. The Scioto River crosses the county from north to south a little east of the middle. The Darby and Deer Creeks, rising in northern Madison County and flowing southeasterly in parallel courses 4 to 6 miles apart, and Salt Creek, east of the Scioto, are the principal drainage channels.

Soils.—The broad valley of the Scioto, with its rich bottom and terrace lands, is an important feature of the county. The valleys of the Darby and Deer Creeks also contain considerable areas of very fertile soil. The southeastern township projects into the Volusia area while the Miami soils overlie the larger part of the uplands of the county, with considerable areas of the dark Clyde clay loam in the western townships.

Agriculture.—From its first occupation by the white man, and probably long before, corn has been the principal crop of the Scioto Valley, many fields having grown corn almost continuously since the original forest growth was removed. In the first half of the 60-year period under review corn occupied nearly twice as much land in Pickaway County as was given to all other crops, including the hay crops, but during the last 30 years a larger share of the land has been given to wheat, until it now occupies about two-thirds as much land as corn.

There has been a rapid increase in the purchase of fertilizers during the last 20 years, the quantity rising from an average of 521,000 pounds during the 'nineties to 4,192,000 pounds during the next decade.

The same tendency to decrease in the number of livestock is shown in Pickaway that is generally observed over the State. Cattle have dropped from 28,000 during the 'fifties to 18,000 during the last decade; hogs from 56,000 during the 'sixties to 24,000, and all stock from the equivalent of 46,790 cattle to 28,805—a loss of about 40 percent.

PICKAWAY COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total		24,875	27,415	26,959	27,016	26,158
White		23,795	26,140	25,948	26,226	25,463
Negro		1,080	1,252	1,009	788	695
Foreign born		1,092	939	744	522	468
Rural					20,025	19,414
Urban					6,991	6,744

Population of cities or towns, 1910: Circleville, 6,744.

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area—Acres				313,600
Land in farms—Acres	314,412	300,266	309,642	310,422
Improved land in farms—Acres	258,900	263,799	257,140	283,807
Woodland in farms—Acres	51,641	36,467	52,502	19,096
Other unimproved land in farms—Acres	3,871			7,519
Total number of farms—Number	2,233	2,392	2,429	2,306
Area of average farm—Acres	140.8	125.5	127.5	134.6
Improved land per farm—Acres	115.9	110.3	105.9	123.1
Value of all property per farm—Dollars	7,771	6,670	7,872	14,109
Value of land and buildings per farm—Dollars	6,893	5,901	6,905	12,595
Value of land and buildings per acre—Dollars	48.96	47.02	54.16	93.57

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses—Number	9,298	10,986	10,261	10,460	10,103	7,492
Cattle—Number	28,035	26,969	21,800	22,264	17,972	18,266
Sheep—Number	22,958	31,620	20,021	17,657	10,384	6,630
Hogs—Number	51,085	55,925	52,157	36,681	27,297	23,840
Cattle equivalent—Total	44,737	46,710	39,279	38,158	31,843	28,805
Cattle equivalent—Per 1,000 acres			152	145	124	101

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn—Acres	66,523	68,955	83,588	77,837	75,230	75,018
Bushels	2,666,059	2,453,794	3,046,716	2,873,478	2,857,618	2,894,883
Bushels per acre	40.3	34.7	36.4	36.5	37.8	38.6
Oats—Acres	2,488	3,477	1,897	2,530	1,828	4,013
Bushels	30,075	76,160	43,169	70,085	41,186	119,314
Bushels per acre	12.1	21.9	22.7	27.7	22.5	29.7
Wheat—Acres	22,554	26,628	33,457	53,161	53,321	54,707
Bushels	298,822	277,495	445,804	667,498	776,492	831,558
Bushels per acre	13.2	10.4	13.3	12.5	14.6	15.2
Rye—Acres	591	1,030	595	238	352	617
Bushels	5,142	10,377	7,415	2,133	4,349	6,068
Bushels per acre	8.7	10.1	12.4	8.9	12.4	9.8
Meadows—Acres	7,248	8,865	8,340	13,928	13,817	19,585
Tons	7,476	8,060	7,245	10,717	12,791	15,266
Tons per acre	1.03	.91	.87	.77	.93	.78
Clover—Acres		3,100	4,449	7,386	9,692	10,101
Tons		8.36	1,525	3,741	7,067	7,513
Tons per acre		.27	.34	.51	.73	.74
Pasture—Acres			70,545	74,140	75,845	83,371
Potatoes—Acres		541	816	900	837	350
Bushels		40,791	52,463	65,484	57,602	36,401
Bushels per acre		75.3	64.3	72.7	68.9	104.1
Orchards—Acres		2,739	2,952	2,596	2,240	1,199
Apples—Bushels		58,640	80,357	98,426	56,751	18,837

PIKE COUNTY

Location.—Pike County is in the southwestern quarter of the State, in the Scioto Valley. Bounded on the north by Ross; on the east by Jackson; on the south by Scioto and Adams; on the west by Adams and Highland. Area, 428 square miles. Organized in 1815.

Geology.—The rock floor of Pike County is chiefly Waverly, this formation being named from the quarries at Waverly, the county seat. In the eastern part of the county the rock exposures pass through the Conglomerate to the coal measures; the Scioto and Sunfish Valleys contain outcrops of Huron shale, and the Helderburg limestone occupies a small area in the western end of the county. None of the county, excepting a small area in the northwest corner, has been glaciated.

Topography.—A high, rolling plateau occupies part of the county west of the Scioto and north of the Sunfish but the general topography, outside of the river valleys, is very hilly and broken. The drainage channels are the Scioto crossing the county from northeast to south, a little east of the middle, and Sunfish and Beaver Creeks, flowing from the west and east, respectively, and forming an east-and-west depression through the county.

Soils.—The predominant soil type is the Dekalb silt loam, which covers the highlands of the county and is generally very deficient in drainage. The broad valley of the Scioto gives a considerable area of bottom and terrace land, and an ancient channel leaving the Scioto below Waverly and after extending east into Jackson County turning south and reaching the Ohio a few miles above Portsmouth—apparently at one time the main channel or a delta channel of the Scioto, contains now a belt of silt loam similar in character to the terrace soils of the Scioto Valley.

Agriculture.—Corn is the principal crop and is grown chiefly in the valleys, where it is frequently grown year after year on the same land. The average yield per acre was higher during the 'fifties than it has been since. Wheat has averaged less than 10 bushels per acre for the 60 years under review. The slight increase during the last two decades is explained in the use of fertilizers, the average purchases of which were 1,717,000 pounds during the 'nineties and 2,484,000 pounds during the last 10 years.

The number of livestock has always been relatively low, amounting only to the equivalent of 110 cattle per 1,000 acres of improved land during the 'seventies and 'eighties, and falling to 75 for the last decade.

PIKE COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total		15,447	17,927	17,482	18,172	15,723
White		14,304	16,700	16,659	17,413	15,006
Negro		1,142	1,227	823	758	717
Foreign born		899	708	512	317	220
Rural					18,172	15,723
Urban						

Population of cities or towns, 1910: Waverly, 1,803.

FARMS: U. S. Census

Farms: U. S. census	1880	1890	1900	1910
Approximate land area—Acres				273,920
Land in farms—Acres	254,880	224,376	243,016	242,226
Improved land in farms—Acres	151,341	137,567	144,498	136,462
Woodland in farms—Acres	98,363	86,809	98,518	83,959
Other unimproved land in farms—Acres	5,176			21,805
Total number of farms—Number	1,891	1,971	2,385	2,189
Area of average farm—Acres	134.8	113.8	101.9	110.7
Improved land per farm—Acres	80.0	69.8	60.6	62.3
Value of all property per farm—Dollars	2,341	2,169	1,800	2,905
Value of land and buildings per farm—Dollars	2,021	1,829	1,485	2,387
Value of land and buildings per acre—Dollars	14.99	9.28	14.57	21.56

LIVESTOCK: Ten-year average numbers; Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses—Number	3,747	4,783	4,948	4,389	4,280	3,364
Cattle—Number	8,462	9,467	9,143	8,712	6,299	5,882
Sheep—Number	10,209	17,786	9,393	10,193	5,898	3,636
Hogs—Number	22,806	21,224	16,731	10,548	7,488	6,033
Cattle equivalent—Total	15,511	18,151	16,703	15,175	11,918	10,213
Cattle equivalent—Per 1,000 acres			110	110	82	75

FARM CROPS: Ten-year averages; Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn—Acres	24,180	23,907	28,349	24,139	23,387	25,970
Bushels	874,481	708,599	839,494	670,535	709,898	782,809
Bushels per acre	36.7	29.6	29.5	27.8	30.3	30.1
Oats—Acres	4,071	4,758	6,258	4,821	2,004	2,972
Bushels	33,628	69,959	84,616	64,075	24,211	41,665
Bushels per acre	8.2	14.7	13.5	13.3	12.1	14.0
Wheat—Acres	8,540	10,901	9,071	12,673	17,502	12,998
Bushels	77,083	84,111	75,851	131,965	203,321	149,123
Bushels per acre	9.0	7.7	8.3	10.4	11.6	11.5
Rye—Acres	187	363	161	95	77	236
Bushels	1,070	2,430	935	586	662	1,797
Bushels per acre	5.7	6.7	5.8	6.2	8.6	7.6
Meadows—Acres	3,208	4,818	5,518	8,551	8,257	8,983
Tons	3,364	4,156	4,253	7,042	6,954	7,614
Tons per acre	1.05	.87	.77	.82	.84	.84
Clover—Acres		564	851	1 989	3,551	3,277
Tons		114	178	869	1,699	2,461
Tons per acre		.20	.21	.44	.48	.74
Pasture—Acres			37,571	46,219	47,678	50,363
Potatoes—Acres		427	791	705	568	651
Bushels		29,429	48,954	39,553	36,975	49,217
Bushels per acre		68.9	61.9	55.6	65.0	75.6
Orchards—Acres		2,377	2,952	3,386	3,145	2,454
Apples—Bushels		38,340	94,592	113 949	65,833	33,310

PORTAGE COUNTY

Location.—Portage County is in the northeastern quarter of the State. Bounded on the north by Geauga; on the east by Trumbull and Mahoning; on the south by Mahoning and Stark; on the west by Summit. Area, 521 square miles. Organized in 1807.

Geology.—The greater part of the county lies over the coal measures. In the northeastern and northwestern corners the upper strata are Conglomerate, excepting a small area of Waverly in the northeastern corner. The entire county is covered with glacial drift.

Topography.—The general topography is gently rolling. There are a few small tracts of level land, and a few others in which the surface is hilly, rather than rolling. The Cuyahoga River, rising in Geauga County and flowing southwesterly through the northwest quarter of Portage and receiving tributaries from the southwest quarter is the chief drainage outlet. The eastern part of the county is drained by headwaters of the Mahoning.

Soils.—The soils are the nearly related Volusia, Wooster and Trumbull series, including silt loams, gravelly loams and clay loams, the latter formations occupying the larger area.

Agriculture.—Dairying is a leading industry in the county, and a larger acreage is given to potatoes in Portage than in any other county in the State except Cuyahoga. Corn, as grown for the grain, occupies less land than that given to oats or wheat, but 2,000 to 3,000 acres of corn was grown annually for ensilage during the later decades in addition to that shown in the table. The yield per acre of corn appears to have diminished during the last 30 years, but this may be in part due to the failure of some collectors of statistics to discriminate between bushels of ears and bushels of shelled grain previous to that period, the custom of measuring corn by the bushel basket having been common throughout the Western Reserve in earlier days. Wheat, oats and hay have shown larger yields during the second than during the first 30-year period.

There has been a general decrease in the number of livestock during the later decades, while the annual purchase of fertilizers has increased to 3,449,000 pounds during the 'nineties and 5,245,000 pounds during the last decade.

PORTAGE COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	24,584	27,500	27,868	29,246	30,307
White	.....	24,479	27,356	27,691	28,993	30,111
Negro	.....	105	144	174	250	192
Foreign born	.....	2,453	2,709	2,498	2,384	2,815
Rural	.....	.....	.....	.....	20,702	20,509
Urban	.....	.....	.....	.....	8,544	9,798

Population of cities or towns, 1910: Ravenna, 5,310; Kent, 4,488; Garrettsville, 1,001.

FARMS: U. S. Census

Farms: U. S. census	1880	1890	1900	1910
Approximate land area....Acres..	.....	.....	.....	333,440
Land in farms....Acres..	309,959	292,475	304,162	295,552
Improved land in farms....Acres..	240,020	227,084	209,145	184,945
Woodland in farms....Acres..	57,906	65,391	95,017	48,392
Other unimproved land in farms....Acres..	11,943			62,215
Total number of farms....Number..	3,315	3,351	3,557	3,591
Area of average farm....Acres..	93.5	87.3	85.5	82.3
Improved land per farm....Acres..	72.5	67.8	58.8	51.5
Value of all property per farm....Dollars..	5,365	4,519	4,246	5,468
Value of land and buildings per farm....Dollars..	4,799	3,957	3,668	4,672
Value of land and buildings per acre....Dollars..	51.33	45.33	42.90	56.72

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses....Number..	6,732	7,909	7,936	8,651	8,743	7,039
Cattle....Number..	33,264	29,832	30,393	26,220	19,776	19,814
Sheep....Number..	82,700	101,671	40,853	43,901	36,415	16,107
Hogs....Number..	9,458	7,074	6,869	7,269	7,235	6,110
Cattle equivalent { Total	49,212	48,616	43,101	39,988	32,884	29,075
Cattle equivalent { Per 1,000 acres	.....	.....	180	176	157	157

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn....Acres..	9,722	9,912	12,623	13,266	15,044	14,508
Bushels..	338,092	388,325	603,891	404,389	480,513	439,288
Bushels per acre..	34.7	38.8	48.3	30.0	31.8	30.3
Oats....Acres..	7,898	9,173	13,300	15,444	17,933	20,002
Bushels..	199,217	275,927	428,073	538,964	607,472	702,890
Bushels per acre..	25.2	30.1	32.2	34.9	33.9	35.1
Wheat....Acres..	12,470	9,144	11,831	21,971	20,379	18,052
Bushels..	160,113	112,796	178,382	378,639	338,407	313,401
Bushels per acre..	12.8	12.3	15.1	17.2	16.6	17.4
Rye....Acres..	1,621	1,256	425	1,151	342	360
Bushels..	8,449	12,659	5,080	14,861	3,804	5,124
Bushels per acre..	5.2	10.1	11.9	12.9	11.1	14.3
Meadows....Acres..	39,125	38,969	36,062	27,804	27,683	28,592
Tons..	43,935	44,052	37,564	33,132	35,316	36,374
Tons per acre..	1.12	1.13	1.04	1.19	1.28	1.27
Clover....Acres..	.....	2,737	3,347	8,759	6,477	4,458
Tons..	.....	3,323	4,162	11,251	9,242	6,141
Tons per acre..	.....	1.13	1.28	1.27	1.43	1.38
Pasture....Acres..	.....	.....	108,878	121,771	99,552	104,232
Potatoes....Acres..	.....	1,828	2,808	3,127	5,214	8,133
Bushels..	.....	173,084	264,654	261,238	501,641	749,088
Bushels per acre..	.....	94.6	94.3	87.1	96.2	92.1
Orchards....Acres..	.....	5,682	6,324	5,786	5,044	3,601
Apples....Bushels..	.....	174,296	315,221	287,175	148,216	198,164

PREBLE COUNTY

Location.—Preble County is in the southwestern quarter of the State, on the Indiana line. Bounded on the north by Darke; on the east by Montgomery; on the south by Butler; on the west by Union and Wayne Counties, Indiana. Area, 416 square miles. Organized in 1808.

Geology.—The surface rock is limestone, belonging to the Niagara formation over the northern two-thirds of the county, and to the Richmond over the southern third. The rock floor is everywhere covered with glacial drift.

Topography.—The general topography is level to gently rolling over the northern part of the county and rolling to hilly over the southern part. The chief drainage channels are Twin Creek in the eastern townships, Seven-mile Creek in the middle, and Four-mile Creek in the western, all flowing from north to south and southeast into the Great Miami.

Soils.—The soils of the county belong to the Miami and Bellefontaine series, clay loams predominating in the northern half of the county and silt loams and gravelly loams in the southern. The creek valleys contain narrow strips of terrace land, and small areas of black land are scattered through the county.

Agriculture.—Corn on the one hand and the small grains on the other occupy nearly equal areas, and all show increasing yields. Clover is the principal hay crop, covering nearly three times as many acres as other hay crops. The hay crops combined occupy about one-fourth of the land in cultivation. Very few counties of the State show as small a decrease in the number of livestock as Preble, while this county has been the largest user of commercial fertilizers in the western half of the State, the quantity purchased annually amounting to 3,449,000 pounds during the 'nineties and 6,288,000 pounds during the last decade. With a limestone soil, and the habits of crop rotation, clover growing and livestock keeping well established, Preble County has laid the foundation of a prosperous agriculture; but the work of the experiment farm at Germantown, Montgomery County, which is located on a soil very similar to that of much of Preble County, has shown that it is economically practicable to produce much larger yields than those yet shown in Preble County.

Preble County is the third county in this State in the area given to tobacco, the annual acreage in this crop being 7,175 acres during the last decade, as against nearly 12,000 acres in Montgomery and nearly 11,600 acres in Darke.

PREBLE COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	21,809	24,533	23,421	23,713	23,834
White	.....	21,390	24,051	23,024	23,386	23,569
Negro	.....	419	482	394	327	265
Foreign born	.....	1,703	1,027	811	628	471
Rural	.....	.....	.....	.....	20,558	20,647
Urban	.....	.....	.....	.....	3,155	3,187

Population of cities or towns, 1910: Eaton. 3,187; West Alexandria, 1,030.

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area ..... Acres	.....	.....	.....	266,240
Land in farms ..... Acres	258,551	259,556	264,537	265,819
Improved land in farms ..... Acres	190,081	205,447	215,457	224,891
Woodland in farms ..... Acres	65,584	54,109	49,080	29,455
Other unimproved land in farms ..... Acres	2,886			11,473
Total number of farms ..... Number	2,519	2,795	3,085	3,309
Area of average farm ..... Acres	102.6	92.9	85.7	80.3
Improved land per farm ..... Acres	75.5	73.5	69.8	68.0
Value of all property per farm ..... Dollars	5,842	4,527	4,785	7,772
Value of land and buildings per farm ..... Dollars	5,231	3,979	4,155	6,790
Value of land and buildings per acre ..... Dollars	50.98	42.83	48.48	84.55

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-00
Horses ..... Number	8,461	8,849	8,833	9,460	9,565	8,560
Cattle ..... Number	17,689	15,317	15,739	16,787	14,243	15,678
Sheep ..... Number	20,430	14,789	9,395	11,037	7,739	5,780
Hogs ..... Number	42,921	37,897	39,974	31,478	24,042	29,706
Cattle equivalent { Total	32,485	29,435	29,509	30,499	26,986	27,727
Cattle equivalent { Per 1,000 acres	.....	.....	155	148	125	123

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn ..... Acres	33,663	36,233	47,886	45,511	48,673	55,271
Bushels	1,203,977	1,212,771	1,825,772	1,558,506	1,677,936	2,288,026
Bushels per acre	35.8	34.1	38.3	34.1	34.4	41.4
Oats ..... Acres	7,481	9,128	12,884	13,565	11,544	11,303
Bushels	126,491	237,863	329,760	385,573	313,075	373,520
Bushels per acre	16 9	26.1	25.6	28.4	27.2	33.0
Wheat ..... Acres	28,942	36,982	31,591	38,995	44,185	41,928
Bushels	397,215	450,223	356,753	494,015	703,675	630,041
Bushels per acre	13.7	12.2	11.3	12.7	15.9	15.0
Rye ..... Acres	473.5	446	339	130	431	382
Bushels	4,954.5	4,932	3,410	1,269	3,617	4,760
Bushels per acre	10.5	11.1	10.1	9.7	8.4	12.5
Meadows ..... Acres	7,064	5,513	5,416	8,155	10,542	8,173
Tons	7,491	5,272	5,449	8,478	10,603	8,375
Tons per acre	1.06	.96	1.01	1.04	1.01	1.02
Clover ..... Acres	.....	11,413	12,703	19,432	23,462	23,414
Tons	.....	2,325	3,660	5,600	10,062	13,175
Tons per acre	.....	.20	.29	.29	.43	.56
Pasture ..... Acres	.....	.....	29,925	39,751	30,339	44,683
Potatoes ..... Acres	.....	505	830	768	842	420
Bushels	.....	35,432	61,032	60,419	52,951	32,208
Bushels per acre	.....	70.1	73.5	78.6	62.9	76.7
Orchards ..... Acres	.....	3,341	3,385	2,521	2,493	2,002
Apples ..... Bushels	.....	66,081	95,714	50,508	43,301	28,603

PUTNAM COUNTY

Location.—Putnam County is in the northwestern quarter of the State. Bounded on the north by Defiance and Henry; on the east by Hancock; on the south by Allen; and on the west by Van Wert and Paulding. Area, 482 square miles. Organized in 1820.

Geology.—The floor of the county is Waterlime, excepting a small area of Oriskany and Corniferous in the northwestern corner. This floor is everywhere carpeted with glacial drift, which has been worked over and waterlaid in the northwestern quarter of the county by the waters of the extension of Lake Erie which once covered this region.

Topography.—The topography is that of a flat plain, the only changes in elevation being due to the shallow valleys of the streams and the low, sandy or gravelly ridges constituting the beaches of the ancient lake. The drainage is through the Blanchard River, which flows through the middle of the county from east to west into Auglaize, and other smaller tributaries of that stream.

Soils.—The larger part of the county is covered with the black Clyde soils—clay and clay loam—characterizing what was formerly known as the Black Swamp, a soil which has been converted by drainage into one of the most valuable in the State. The soil of the middle-eastern township of the county is somewhat higher and is classed as Miami clay loam, while the soil of the valley of the Blanchard is a stiff, heavy, gray clay—the Miami clay.

Agriculture.—Corn and the small grains have occupied nearly equal areas and all have shown a steadily increasing yield per acre until the last decade, during which winter-killing has reduced the yield of wheat and caused considerable transfer from wheat to oats and corn.

In total number the livestock of the county has shown almost no decrease, but the number in proportion to the cultivated area has become smaller because of the great increase of that area through clearing away the forest and draining the land.

Putnam, like Paulding, has hardly begun to feel the need of commercial fertilizers. As in Paulding, so also in Putnam, the most urgent need is for more and better drainage.

The culture of sugarbeets has been undertaken in a small way, 2,000 acres being reported in this crop in 1916. A sugar mill has been established at Ottawa.

PUTNAM COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	17,081	23,713	30,188	32,525	29,972
White	.....	17,008	23,619	30,125	32,467	29,946
Negro	.....	73	94	62	58	26
Foreign born	.....	2,048	2,046	1,989	1,574	1,090
Rural	.....	.....	.....	.....	32,525	29,972
Urban	.....	.....	.....	.....	.....	.....

Population of cities or towns, 1910: Ottawa, 2,182; Columbus Grove, 1,802: Leipsic, 1,773; Continental, 1,074.

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area, Acres	.....	.....	.....	308,480
Land in farms, Acres	239,836	255,928	290,553	292,502
Improved land in farms, Acres	134,836	177,500	234,066	252,866
Woodland in farms, Acres	100,133	} 78,428	56,487	} 34,783
Other unimproved land in farms, Acres	4,837	}		} 4,853
Total number of farms, Number	2,693	3,179	3,598	3,469
Area of average farm, Acres	89.1	80.5	80.8	84.3
Improved land per farm, Acres	50.1	55.8	65.1	72.9
Value of all property per farm, Dollars	3,829	4,519	4,656	9,990
Value of land and buildings per farm, Dollars	3,396	3,971	4,054	8,861
Value of land and buildings per acre, Dollars	38.11	12.49	50.17	105.11

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses, Number	2,943	5,187	6,558	7,543	8,830	7,351
Cattle, Number	8,981	13,312	16,219	17,956	14,339	15,179
Sheep, Number	8,760	21,768	18,504	13,970	12,198	9,483
Hogs, Number	15,811	8,697	24,657	27,759	29,335	28,278
Cattle equivalent, Total	14,381	21,546	27,093	29,672	27,322	26,306
Cattle equivalent, Per 1,000 acres	.....	.....	201	167	117	104

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn, Acres	11,013	17,563	30,132	39,693	52,066	60,991
Corn, Bushels	328,180	497,742	1,037,660	1,493,424	1,985,900	2,488,056
Corn, Bushels per acre	29.0	28.8	34.9	37.5	38.1	40.8
Oats, Acres	3,234	3,081	5,697	4,347	6,192	22,711
Oats, Bushels	31,480	70,574	164,952	137,654	195,886	696,034
Oats, Bushels per acre	9.7	22.9	28.9	31.7	31.6	30.6
Wheat, Acres	6,724	11,876	18,356	32,619	40,967	35,002
Wheat, Bushels	73,055	128,379	263,582	493,526	642,500	493,823
Wheat, Bushels per acre	10.9	10.9	14.1	15.1	15.7	14.3
Rye, Acres	431	1,303	704	1,741	1,949	1,213
Rye, Bushels	4,458	13,260	10,566	23,091	21,629	21,458
Rye, Bushels per acre	10.3	10.0	15.0	13.2	11.1	17.7
Meadows, Acres	6,293	7,974	9,754	13,417	17,338	19,085
Meadows, Tons	7,542	9,227	11,177	16,816	21,019	24,420
Meadows, Tons per acre	1.20	1.16	1.14	1.25	1.21	1.28
Clover, Acres	.....	2,435	4,041	5,975	7,941	11,239
Clover, Tons	.....	2,754	4,273	6,829	9,356	14,233
Clover, Tons per acre	.....	1.12	1.06	1.14	1.18	1.26
Pasture, Acres	.....	.....	.....	8,753	13,002	16,116	42,124
Potatoes, Acres	.....	664	1,048	1,494	1,416	1,039
Potatoes, Bushels	.....	37,858	75,039	124,173	87,798	92,469
Potatoes, Bushels per acre	.....	57.0	71.6	83.1	61.9	89.0
Orchards, Acres	.....	2,140	2,684	3,012	3,015	2,786
Orchards, Apples, Bushels	.....	64,832	93,907	101,171	63,856	68,822

RICHLAND COUNTY

Location.—Richland County is on the western side of the northeastern quarter of the State. Bounded on the north by Huron; on the east by Ashland; on the south by Knox and Morrow, and on the west by Morrow and Crawford. Area, 503 square miles. Organized in 1813.

Geology.—The surface rocks are the sandstones and shales of the Waverly, excepting a small outcrop of Corniferous and Conglomerate in the northeastern corner of the county. The county is everywhere covered with glacial drift.

Topography.—The northern part of the county is level to rolling. The southern part is quite hilly. The chief drainage channels are the Black Fork of the Mohican, which rises in the northwestern quarter of the county and flows southeasterly into Ashland County, and Clear Fork and smaller tributaries of the Mohican which drain the southern townships.

Soils.—The predominant soil type is the Wooster silt loam, which covers the central and southern parts of the county excepting a small area of Dekalb silt loam in the southeastern corner. Over part of the northwestern quarter of the county the soil is a little heavier and more of the Volusia type.

Agriculture.—Richland is the westernmost of a belt of counties—Richland, Ashland, Wayne and Stark—in which soil and climatic conditions have been found to be especially favorable to wheat and in which that crop occupies a larger area than that given to corn. In Richland the yield of wheat per acre has steadily increased throughout the 60-year period, excepting a halt during the 'nineties. The yield per acre, however, has not reached as high a point as in Wayne and Stark.

The purchase of commercial fertilizers has increased to 2,176,000 pounds annually during the 'nineties and to 3,666,000 pounds during the last decade, while the number of livestock has diminished by the equivalent of nearly 12,000 cattle since the 'eighties.

RICHLAND COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total		32,516	36,306	38,072	44,289	47,667
White		32,372	36,119	37,944	44,082	47,412
Negro		144	186	128	204	253
Foreign born		3,024	2,829	2,901	2,775	3,910
Rural					21,964	21,996
Urban					22,325	25,671

Population of cities or towns, 1910: Mansfield, 20,768; Shelby, 4,903; Bellville, 1,056; Plymouth, 1,314. (Richland and Huron).

FARMS: U. S. Census

FARMS: U. S. Census	1880	1890	1900	1910
Approximate land area—Acres				321,929
Land in farms—Acres	311,016	298,256	304,243	303,085
Improved land in farms—Acres	233,585	235,103	239,351	236,328
Woodland in farms—Acres	73,399	63,153	64,892	50,412
Other unimproved land in farms—Acres	4,032			16,345
Total number of farms—Number	3,138	3,209	3,419	3,262
Area of average farm—Acres	99.1	92.9	89.0	92.9
Improved land per farm—Acres	74.4	73.3	70.0	72.4
Value of all property per farm—Dollars	6,781	5,020	4,171	7,066
Value of land and buildings per farm—Dollars	6,125	4,411	3,546	6,020
Value of land and buildings per acre—Dollars	61.81	47.48	39.84	64.80

LIVESTOCK; Ten-year average numbers: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Horses—Number	9,575	9,998	9,567	10,035	9,380	6,802
Cattle—Number	22,977	21,561	21,958	20,216	15,255	15,537
Sheep—Number	76,613	87,368	63,210	66,112	47,062	35,710
Hogs—Number	29,797	29,992	30,051	25,409	19,818	18,144
Cattle equivalent—Total	43,193	43,295	30,851	39,403	31,323	27,724
Cattle equivalent—Per 1,000 acres			132	168	131	117

FARM CROPS; Ten-year averages: Ohio statistics

	1850–50	1860–69	1870–79	1880–89	1890–99	1900–09
Corn—Acres	20,558	23,458	27,289	27,457	28,411	29,623
Corn—Bushels	582,507	688,023	934,267	841,070	898,092	1,086,912
Corn—Bushels per acre	28.3	28.0	34.3	30.5	31.6	36.8
Oats—Acres	18,469	18,739	23,503	21,760	23,321	24,547
Oats—Bushels	410,225	532,162	763,350	747,684	746,155	854,058
Oats—Bushels per acre	22.2	28.4	32.5	34.4	32.0	34.8
Wheat—Acres	27,899	26,902	29,883	39,429	37,031	32,465
Wheat—Bushels	343,805	345,510	445,582	626,772	574,827	519,091
Wheat—Bushels per acre	12.3	12.8	14.9	15.9	15.5	16.0
Rye—Acres	3,364	2,158	663	543	821	458
Rye—Bushels	34,473	25,223	7,629	5,353	9,050	6,098
Rye—Bushels per acre	10.3	11.7	11.5	9.8	11.0	13.3
Meadows—Acres	24,057	23,507	18,581	21,533	25,954	25,271
Meadows—Tons	29,497	29,650	21,904	29,857	33,293	32,507
Meadows—Tons per acre	1.23	1.26	1.18	1.39	1.28	1.28
Clover—Acres		11,588	13,709	14,411	12,741	15,605
Clover—Tons		9,584	12,439	14,530	14,782	20,220
Clover—Tons per acre		.83	.91	1.01	1.16	1.29
Pasture—Acres			49,121	50,906	41,784	50,937
Potatoes—Acres		1,126	1,510	1,777	1,863	1,915
Potatoes—Bushels		99,698	127,927	152,651	159,825	190,556
Potatoes—Bushels per acre		88.6	84.7	96.8	85.8	99.8
Orchards—Acres		5,896	5,960	5,746	5,436	4,672
Apples—Bushels		236,545	322,158	209,910	127,392	140,053

ROSS COUNTY

Location.—Ross County is on the east side of the southwestern quarter of the State, in the Scioto Valley. Bounded on the north by Pickaway; on the east by Hocking, Vinton and Jackson; on the south by Jackson and Pike; on the west by Highland and Fayette. Area, 668 square miles. Organized in 1798.

Geology.—The southeastern half of the county lies over Waverly rocks. The remainder is chiefly underlaid with the Huron shale, the western boundary reaching into the limestones. The glacial boundary is approximately a line connecting the northeastern and southwestern corners of the county.

Topography.—The northwestern quarter of the county is level to rolling; the remainder is hilly to very hilly, excepting the creek and river valleys. The drainage of the eastern half is through the Scioto River, which crosses the county, flowing south to Chillicothe, thence southeast to near the corner of the county and having a broad flood plain throughout its course, which expands until it occupies the larger part of the southeastern township of the county. The western half of the county is drained by Paint Creek, which enters near the southwest corner and joins the Scioto at Chillicothe, after having received a large branch—the North Fork—coming from the northwest.

Soils.—The broad valleys of the Scioto and Paint Creek furnish a considerable area of bottom and terrace land. Outside of these valleys the soils belong to the Dekalb series south of the line of glaciation and to the Miami series north of that line, with small areas of Volusia clay loam in the northeastern corner.

Agriculture.—The large areas of alluvial soil has made corn the principal crop of the county. Continuous growing of the one crop, however, has been unfavorable and the 60-year period closes with lower yields of corn than it began. Wheat has ended the period about a bushel and a half per acre higher than it began. The hay crops have occupied about half as much land as that given to wheat, and have averaged less than three-quarters of a ton of hay to the acre.

The number of livestock has diminished by the equivalent of 10,000 cattle in 30 years. The purchase of commercial fertilizers has increased to 1,539,000 pounds during the 'nineties, and to 3,667,000 pounds during the last decade, or to about enough to give each acre of wheat 90 pounds, if all were applied to that crop.

ROSS COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total		37,097	40,307	39,454	40,940	40,069
White		33,862	37,020	36,560	38,272	37,686
Negro		3,230	3,286	2,892	2,663	2,382
Foreign born		3,158	2,564	1,988	1,380	886
Rural					27,964	25,561
Urban					12,976	14,508

Population of cities or towns, 1910; Chillicothe, 14,508.

FARMS: U. S. Census

Farms: U. S. census	1880	1890	1900	1910
Approximate land area ..... Acres				427,520
Land in farms ..... Acres	405,853	382,879	405,198	404,171
Improved land in farms ..... Acres	289,900	282,291	307,181	291,913
Woodland in farms ..... Acres	106,370	100,588	98,017	78,577
Other unimproved land in farms ..... Acres	9,583			33,681
Total number of farms ..... Number	2,823	2,984	3,301	3,218
Area of average farm ..... Acres	143.8	128.3	122.8	125.6
Improved land per farm ..... Acres	102.7	94.6	93.1	90.7
Value of all property per farm ..... Dollars	6,089	4,508	4,673	7,983
Value of land and buildings per farm ..... Dollars	5,433	3,924	4,079	7,058
Value of land and buildings per acre ..... Dollars	37.78	30.58	32.22	56.19

LIVESTOCK: Ten year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-90
Horses ..... Number	10,575	11,647	11,591	11,026	11,415	7,201
Cattle ..... Number	26,436	23,639	22,740	20,399	18,726	15,979
Sheep ..... Number	22,127	31,992	15,901	15,460	16,084	8,472
Hogs ..... Number	68,090	57,526	53,883	37,443	26,582	24,804
Cattle equivalent { Total	46,033	44,238	41,309	36,715	34,408	26,508
Cattle equivalent { Per 1,000 acres			142	130	112	91

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn ..... Acres	73,940	66,391	75,086	66,880	63,547	62,312
Bushels	2,938,423	2,312,415	2,768,398	2,266,706	2,276,395	2,372,476
Bushels per acre	39.7	34.4	36.7	33.8	35.8	38.1
Oats ..... Acres	4,287	4,763	3,872	3,974	2,411	2,423
Bushels	44,606	88,763	58,805	73,019	41,886	52,724
Bushels per acre	10.4	18.6	15.2	18.3	17.4	21.8
Wheat ..... Acres	29,284	31,219	31,927	43,713	47,911	39,860
Bushels	369,865	301,824	377,911	548,526	641,302	557,454
Bushels per acre	12.6	9.7	11.8	12.5	13.4	14.0
Rye ..... Acres	754	1,303	685	290	494	554
Bushels	7,352	13,260	6,340	2,168	3,769	4,664
Bushels per acre	9.8	10.2	9.3	7.4	7.6	8.4
Meadows ..... Acres	7,565	8,639	8,291	15,567	16,009	17,698
Tons	8,414	7,859	6,437	11,077	17,338	14,055
Tons per acre	1.11	.91	.77	.71	.78	.78
Clover ..... Acres		4,682	5,729	9,053	8,957	7,262
Tons		543	1,083	3,077	4,794	5,343
Tons per acre		.14	.19	.34	.54	.73
Pasture ..... Acres			78,842	115,572	101,012	97,755
Potatoes ..... Acres		758	1,068	1,178	1,327	872
Bushels		50,764	67,456	71,639	91,158	70,189
Bushels per acre		66.9	63.1	60.8	68.7	80.4
Orchards ..... Acres		4,386	5,024	5,313	5,014	3,483
Apples ..... Bushels		106,742	132,607	155,333	98,116	37,225

SANDUSKY COUNTY

Location.—Sandusky County is in the northwest quarter of the State. Bounded on the north by Ottawa County and Sandusky Bay; on the east by Erie and Huron; on the south by Seneca; on the west by Wood. Area, 413 square miles. Organized in 1820.

Geology.—The southeastern township is underlaid with Corniferous limestones; the floor of the remainder of the county is alternating belts of Waterlime and Niagara limestone, each belt 4 to 10 miles wide. The entire county is covered with glacial drift.

Topography.—A part of the eastern townships is gently rolling, but the remainder of the county is a flat plain, the surface monotony relieved only by low ridges of limestone, sometimes capped with lacustrine sand. The chief drainage is through the Sandusky River, which crosses the county near the middle, flowing northward into Sandusky Bay, and numerous small streams which flow directly into the bay. Green Creek crosses the county a few miles east of the Sandusky. The Portage River crosses the northwestern corner of the county and receives a few small tributaries from that quarter.

Soils.—The predominant soil type is the black Clyde clay loam, which covers the flat lands of the county, alternating with small areas of the dark Clyde sandy loam, marking ancient lake beaches. The south-eastern corner of the county is covered with alternations of Miami clay loam and the light-colored Dunkirk sandy loam.

Agriculture.—Until the last decade, more acres of wheat than of corn were grown in Sandusky County and more acres of each of these grain crops than of the hay crops, but the influences which have operated generally over northwestern Ohio during this later period have caused in this county a considerable shifting from wheat to oats and corn, a change of 12,000 acres having occurred in this way, notwithstanding the fact that the acre-yield of wheat remains relatively high. This apparent shifting has, in fact, been due in many cases to sowing oats in the spring on land that had been sown to wheat the fall before, but on which the wheat had been winter-killed.

A relatively small use has been made of commercial fertilizers, the average purchase amounting to 264,476 pounds during the 'nineties and 1,336,640 pounds during the last decade. The livestock of the county has diminished by the equivalent of 8,000 cattle since the 'seventies.

SANDUSKY COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	25,503	32,057	30,617	34,311	35,171
White	.....	25,360	31,863	30,415	34,112	35,021
Negro	.....	143	194	198	196	146
Foreign born	.....	3,959	4,372	4,008	3,241	2,964
Rural	.....	.....	.....	.....	22,063	20,510
Urban	.....	.....	.....	.....	12,248	14,661

Population of cities or towns, 1910: Fremont, 9,939; Clyde, 2,815; Gibsonburg, 1,864; Bellevue (Sandusky and Huron) 5,209.

FARMS: U. S. Census

Farms; U. S. Census	1880	1890	1900	1910
Approximate land area....Acres..	.....	.....	.....	264,320
Land in farms....Acres..	245,302	237,293	247,243	247,142
Improved land in farms....Acres..	177,564	189,662	198,982	206,198
Woodland in farms....Acres..	61,558	47,631	48,261	24,889
Other unimproved land in farms....Acres..	6,180			16,055
Total number of farms....Number..	2,850	2,868	2,842	2,945
Area of average farm....Acres..	86.1	82.7	87.0	83.9
Improved land per farm....Acres..	62.3	66.1	70.0	70.0
Value of all property per farm....Dollars..	6,447	6,299	6,773	9,543
Value of land and buildings per farm....Dollars..	5,724	5,687	6,060	8,465
Value of land and buildings per acre....Dollars..	66.48	68.77	69.66	100.90

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses....Number..	5,483	8,086	8,865	8,535	8,792	6,980
Cattle....Number..	16,395	14,229	16,542	14,698	12,833	12,619
Sheep....Number..	28,433	35,838	33,905	28,220	21,107	12,779
Hogs....Number..	18,787	20,232	21,485	24,580	22,642	17,008
Cattle equivalent { Total	26,600	27,922	30,946	28,513	26,000	22,578
Cattle equivalent { Per 1,000 acres	.....	.....	174	150	131	109

FARM CROPS: Ten-year average production: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn....Acres..	14,483	18,267	27,739	34,230	36,903	41,876
Bushels..	416,408	535,935	1,082,401	1,171,412	1,292,795	1,519,276
Bushels per acre..	29.2	29.2	38.9	34.2	35.0	36.3
Oats....Acres..	6,559	9,370	13,094	11,918	14,549	23,907
Bushels..	126,885	243,014	423,089	408,892	512,294	885,362
Bushels per acre..	19.3	25.9	32.3	34.3	35.2	37.0
Wheat....Acres..	13,268	20,735	32,136	44,462	40,451	28,610
Bushels..	185,556	261,782	574,910	691,483	748,112	486,076
Bushels per acre..	14.0	12.6	17.9	15.6	18.5	17.1
Rye....Acres..	513	261	266	732	601	590
Bushels..	5,455	3,252	4,492	11,843	8,397	9,240
Bushels per acre..	10.6	12.5	16.9	16.1	14.0	15.7
Meadows....Acres..	15,559	12,896	9,774	10,799	15,099	18,403
Tons..	20,609	16,540	12,484	13,485	19,269	22,173
Tons per acre..	1.32	1.28	1.28	1.25	1.28	1.21
Clover....Acres..	.....	7,336	9,399	11,842	12,355	9,099
Tons..	.....	6,467	9,940	14,199	13,520	10,800
Tons per acre..	.....	.88	1.06	1.20	1.09	1.18
Pasture....Acres..	.....	.....	17,922	17,299	19,849	29,567
Potatoes....Acres..	.....	1,271	2,083	1,843	2,021	2,337
Bushels..	.....	110,979	162,356	158,982	171,038	226,046
Bushels per acre..	.....	87.3	78.0	86.2	84.6	96.8
Orchards....Acres..	.....	4,739	4,093	4,475	4,129	3,198
Apples....Bushels..	.....	148,192	207,887	204,560	90,353	104,880

SCIOTO COUNTY

Location.—Scioto County is in southern Ohio, on the Ohio River. Bounded on the north by Pike and Jackson; on the east by Jackson and Lawrence; on the south by the Ohio River and Greenup and Lewis Counties, Kentucky; on the west by Adams. Area, 623 square miles. Organized in 1803.

Geology.—The western part of the county lies over Waverly rocks; the eastern part over the Conglomerate and lower rocks of the coal measures. The county lies south of the limits of glaciation.

Topography.—The county is very hilly, containing no level land except the flood plains and terraces of the streams. In addition to the drainage given by the Ohio River, the Scioto River crosses near the middle of the county from north to south; Brush Creek flows into the Scioto from the west near the middle of the county, and the Little Scioto and Pine Creek drain the eastern half of the county, flowing directly into the Ohio.

Soils.—The predominant soil type is the Dekalb silt loam. The river and stream valleys contain strips of alluvium, that of the Scioto averaging about a mile in width, and an ancient river channel crossing the county 6 or 7 miles east of the present channel is filled with the mixture of silt, sand and clay characterizing terrace soils in general, and named Holston silt loam and Tyler silt loam, the former term being applied to the darker, more friable soils, the latter term to the lighter colored, more compact ones.

Agriculture.—The yields of corn averaged larger during the 'fifties than they have done for any succeeding decade, and the yields of wheat were larger then than for the next three decades. With the use of commercial fertilizers, which began during the 'eighties and averaged 1,705,000 pounds annually during the 'nineties and 2,944,600 pounds during the last decade, there was a revival in wheat yields, but the rate of yield is still too low for profit.

The quantity of fertilizers purchased during the last decade amounts to about 200 pounds for each acre sown in wheat, and should have produced a larger increase than apparently was secured, but while this expenditure for fertilizers was being made the livestock of the county diminished by the equivalent of 6,000 cattle, the manure from which if carefully saved and applied would have returned to the land a far greater quantity of the essential elements of fertility than was contained in the fertilizers.

Much of the land in this county, however, cannot produce its full yield until lime is added in some form.

SCIOTO COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total		29,302	33,511	35,377	40,981	48,463
White		28,289	32,352	34,289	39,877	47,442
Negro		1,013	1,159	1,088	1,101	1,016
Foreign born		3,575	2,943	2,246	1,737	1,472
Rural					23,111	24,982
Urban					17,870	23,481

Population of cities or towns, 1910: Portsmouth, 23,481; New Boston, 1,858.

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area—Acres				398,720
Land in farms—Acres	275,376	252,380	283,950	276,273
Improved land in farms—Acres	137,797	129,486	184,795	138,295
Woodland in farms—Acres	121,642	122,894	99,155	117,334
Other unimproved land in farms—Acres	15,933			20,644
Total number of farms—Number	2,200	2,209	2,635	2,896
Area of average farm—Acres	125.2	11.43	107.8	95.4
Improved land per farm—Acres	62.6	58.6	70.1	47.8
Value of all property per farm—Dollars	2,309	2,181	2,133	2,861
Value of land and buildings per farm—Dollars	2,206	1,853	1,796	2,443
Value of land and buildings per acre—Dollars	17.62	16.22	16.66	25.61

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses—Number	3,724	4,940	5,376	4,702	4,812	4,048
Cattle—Number	10,003	12,740	12,347	12,143	8,845	7,621
Sheep—Number	8,450	12,710	7,152	5,679	2,294	1,235
Hogs—Number	17,722	19,305	14,988	9,935	7,357	5,532
Cattle equivalent—Total	16,344	29,882	19,937	18,406	14,622	12,346
Cattle equivalent—Per 1,000 acres			145	142	79	89

FARM CROPS: 10-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn—Acres	23,532	24,061	26,680	21,200	23,271	23,442
Corn—Bushels	832,929	687,844	784,036	604,114	700,198	666,558
Corn—Bushels per acre	35.7	28.6	29.4	28.5	31.4	28.5
Oats—Acres	4,470	5,277	8,291	6,184	3,752	3,627
Oats—Bushels	28,569	76,420	112,458	78,145	54,858	57,289
Oats—Bushels per acre	6.4	14.5	13.6	12.6	14.6	15.9
Wheat—Acres	8,790	12,629	8,615	11,206	16,141	14,647
Wheat—Bushels	97,002	103,755	79,918	113,483	202,802	182,180
Wheat—Bushels per acre	11.0	8.2	9.3	10.1	12.6	12.4
Rye—Acres	39	68	38	52	83	124
Rye—Bushels	291	536	573	300	555	693
Rye—Bushels per acre	7.5	7.9	15.1	5.7	6.7	5.6
Meadows—Acres	3,979	6,924	8,961	10,933	12,371	11,329
Meadows—Tons	5,147	7,068	7,902	9,436	10,937	11,103
Meadows—Tons per acre	1.29	1.00	.89	.86	.88	.98
Clover—Acres		1,032	918	1,162	2,571	1,778
Clover—Tons		278	326	702	1,622	1,405
Clover—Tons per acre		.27	.36	.60	.63	.79
Pasture—Acres			24,457	31,873	46,637	50,093
Potatoes—Acres		859	1,318	1,213	1,232	1,182
Potatoes—Bushels		48,517	67,933	66,686	77,997	106,157
Potatoes—Bushels per acre		56.4	51.5	54.9	63.2	95.8
Orchards—Acres		2,352	2,919	3,179	3,178	2,151
Apples—Bushels		53,705	65,607	85,389	61,003	31,432

SENECA COUNTY

Location.—Seneca County is on the east side of the northwestern quarter of the State. Bounded on the north by Sandusky; on the east by Huron; on the south by Crawford and Wyandot; on the west by Hancock and Wood. Area, 550 square miles. Organized in 1824.

Geology.—Beginning with a small area of Huron shale in the southeast corner of the county and going westward, the surface rocks, in descending geologic scale, are Hamilton, Corniferous, Oriskany, Waterlime and Niagara, all being limestones except the Huron and the very narrow seam of Oriskany. These rocks are everywhere covered with glacial drift.

Topography.—The chief drainage channel is the Sandusky River, flowing northward through the county a little west of the middle, and gathering in its course the waters of numerous creeks, the largest of which is Honey Creek, flowing westward through the southern townships. The northeastern quarter of the county is drained by Green Creek, flowing northward into Sandusky Bay.

Soils.—The larger part of the county is covered by Miami silt loam; the northwestern quarter extends into the area of black Clyde clay loam so conspicuous in the northwestern quarter of the State. In the north-middle part of the county are considerable areas of more sandy soil—the Clyde sandy loam and Dunkirk sandy loam—extending southward from Sandusky County.

Agriculture.—Wheat has been the leading crop of the county until the last decade, having been grown over a considerably larger area than corn throughout the 60-year period. During the last 20 years, however, there has been considerable shifting from wheat to oats and corn. Clover has been given nearly as much land as other meadow crops.

The annual purchase of commercial fertilizers has amounted to 1,730,000 pounds during the 'nineties, and 5,170,000 pounds during the last decade, while the livestock of the county has diminished by the equivalent of 9,000 cattle since the 'eighties, and of 15,000 since the 'sixties.

SENECA COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	30,827	36,947	40,869	41,163	42,421
White	.....	30,668	36,806	40,675	40,961	42,261
Negro	.....	159	141	193	198	157
Foreign born	.....	3,878	3,774	4,015	2,880	2,394
Rural	.....	.....	.....	.....	23,784	22,475
Urban	.....	.....	.....	.....	17,379	19,946

Population of cities or towns, 1910: Tiffin, 11,894; Fostoria (Seneca and Hancock), 9,597.

FARMS: U S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area ..... Acres..	.....	.....	.....	352,000
Land in farms ..... Acres..	333,065	326,383	327,485	336,645
Improved land in farms ..... Acres..	247,031	263,284	254,534	280,502
Woodland in farms ..... Acres..	81,315	63,099	72,951	42,983
Other unimproved land in farms ..... Acres..	4,719			13,163
Total number of farms ..... Number..	3,168	3,121	3,353	3,344
Area of average farm ..... Acres..	105.1	104.6	97.7	100.7
Improved land per farm ..... Acres..	78.0	84.4	75.9	83.9
Value of all property per farm ..... Dollars..	7,420	6,254	6,160	9,916
Value of land and buildings per farm ..... Dollars..	6,790	5,554	5,358	8,658
Value of land and buildings per acre ..... Dollars..	64.61	53.10	54.84	85.97

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Horses ..... Number..	9,341	10,876	11,102	10,535	9,992	7,989
Cattle ..... Number..	23,050	21,014	20,788	19,585	15,824	15,902
Sheep ..... Number..	81,712	104,839	70,885	56,234	40,282	33,047
Hogs ..... Number..	30,693	29,233	31,451	33,125	30,255	29,044
Cattle equivalent { Total	43,632	45,297	42,124	39,056	32,870	30,100
Cattle equivalent { Per 1,000 acres	.....	.....	171	148	129	107

FARM CROPS: Ten-year averages: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Corn ..... Acres..	23,263	26,179	34,686	39,705	42,697	49,384
Bushels..	716,234	721,599	1,191,960	1,331,318	1,461,881	1,804,370
Bushels per acre..	31.0	27.6	34.5	33.5	34.0	36.6
Oats ..... Acres..	14,269	14,749	17,795	17,562	19,417	26,310
Bushels..	332,380	421,613	556,961	515,291	624,686	915,473
Bushels per acre..	23.3	28.6	31.3	35.0	32.2	34.8
Wheat ..... Acres..	31,636	36,491	48,872	62,718	53,202	49,573
Bushels..	426,323	489,341	823,205	950,414	888,135	837,812
Bushels per acre..	13.4	13.4	16.8	15.1	16.7	16.9
Rye ..... Acres..	795	463	176	336	289	251
Bushels..	9,470	5,463	2,445	4,803	3,515	3,929
Bushels per acre..	12.0	11.8	13.9	14.2	12.2	15.6
Meadows ..... Acres..	26,920	22,768	16,844	18,578	26,211	25,715
Tons..	33,370	28,320	18,362	20,139	28,937	30,534
Tons per acre..	1.23	1.25	1.09	1.08	1.10	1.18
Clover ..... Acres..	.....	11,064	16,520	18,118	16,757	20,913
Tons..	.....	10,746	16,888	19,520	19,622	25,023
Tons per acre..	.....	.97	1.02	1.08	1.17	1.19
Pasture ..... Acres..	.....	.....	33,193	30,366	32,628	55,175
Potatoes ..... Acres..	.....	1,138	1,353	1,761	1,897	2,033
Bushels..	.....	96,747	116,494	140,596	134,195	170,417
Bushels per acre..	.....	84.9	86.1	79.8	70.7	83.8
Orchards ..... Acres..	.....	5,588	6,301	6,209	4,753	3,842
Apples ..... Bushels..	.....	222,005	283,013	229,488	89,248	76,994

SHELBY COUNTY

Location.—Shelby County is in the upper Miami Valley, northwestern quarter of the State. Bounded on the north by Auglaize; on the east by Logan and Champaign; on the south by Miami; on the west by Darke and Auglaize. Area, 413 square miles. Organized in 1819.

Geology.—The surface rock under the entire county belongs to the Richmond formation. It is everywhere covered with glacial drift.

Topography.—The surface of the county is level to rolling. The drainage of the eastern half is through headwaters of the Great Miami; that of the western half is through Loramie Creek, an expansion of which is known as Loramie Reservoir. The Miami and Erie Canal follows this creek through the county. The north line of the county is on the divide between lake and river drainage.

Soils.—The soil of the county is the Miami clay loam, with the depressions of the darker Clyde clay loam which are generally associated with the Miami soils.

Agriculture.—Up to the end of the century corn and wheat had occupied approximately equal areas, with about half as much land given to oats as to either of the principal grains, but during the decade 1900-09 there was here as elsewhere throughout this part of the State a change from wheat to oats and corn.

The yields were below the average for this section until the last decade, and that of wheat still remains low. The purchase of commercial fertilizers amounted annually to 445,000 pounds during the 'nineties, and 1,458,600 pounds during the next decade, or enough during this latter period to give each acre of wheat about 40 pounds. Meanwhile the livestock of the county had diminished by the equivalent of 4,000 cattle since the 'eighties.

The work on the Miami County Experiment Farm, which is located on soil very similar to the predominant soil type of Shelby County, is showing that a very much larger use of fertilizers may be made with profit than is being practiced in Shelby County.

SHELBY COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	20,748	24,137	24,707	24,625	24,663
White	.....	20,142	23,602	24,250	24,327	24,432
Negro	.....	600	535	456	298	231
Foreign born	.....	2,263	2,082	1,716	1,172	758
Rural	.....	.....	.....	.....	18,937	18,056
Urban	.....	.....	.....	.....	5,688	6,607

Population of cities or towns, 1910: Sidney, 6,607,

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area....Acres..	.....	.....	.....	264,320
Land in farms....Acres..	254,258	239,203	251,793	247,695
Improved land in farms....Acres..	170,426	182,295	202,356	209,238
Woodland in farms....Acres..	79,896	56,908	49,437	31,622
Other unimproved land in farms....Acres..	3,936			6,835
Total number of farms....Number..	2,667	2,700	2,856	2,718
Area of average farm....Acres..	95.3	88.6	88.2	91.1
Improved land per farm....Acres..	63.9	67.5	70.9	77.0
Value of all property per farm....Dollars..	4,016	4,328	4,061	8,549
Value of land and buildings per farm....Dollars..	3,544	3,822	3,552	7,520
Value of land and buildings per acre....Dollars..	37.19	43.14	45.42	82.55

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses....Number..	4,766	6,302	8,130	8,534	8,865	7,846
Cattle....Number..	11,817	11,262	13,416	16,457	14,202	14,535
Sheep....Number..	16,566	33,599	20,128	13,328	7,792	5,223
Hogs....Number..	20,746	22,222	24,128	21,577	20,129	16,832
Cattle equivalent: Total	70,314	23,146	25,972	28,482	25,859	24,587
Cattle equivalent: Per 1,000 acres	.....	.....	152	156	128	118

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn....Acres..	17,794	22,424	34,758	38,843	43,321	49,352
Bushels..	507,896	578,494	1,093,550	1,333,743	1,406,828	1,955,677
Bushels per acre..	28.5	12.7	32.3	34.4	32.4	39.6
Oats....Acres..	7,882	10,159	15,049	13,369	19,168	30,278
Bushels..	112,811	253,810	368,755	408,397	515,914	1,041,836
Bushels per acre..	14.3	25.0	24.5	30.6	26.9	34.4
Wheat....Acres..	14,887	20,281	25,703	40,442	38,923	32,094
Bushels..	169,526	258,715	328,911	555,001	548,002	439,494
Bushels per acre..	10.7	12.7	12.8	13.7	14.1	13.7
Rye....Acres..	427	722	270	193	333	632
Bushels..	10,616	7,601	2,982	2,836	4,077	7,786
Bushels per acre..	24.8	10.5	11.1	14.6	12.2	12.3
Meadows....Acres..	7,434	7,882	6,792	8,853	12,675	11,813
Tons..	7,625	7,695	6,746	9,816	13,593	12,932
Tons per acre..	1.02	.98	.99	1.11	1.07	1.09
Clover....Acres..	.....	3,010	5,065	9,574	10,592	11,556
Tons..	.....	2,128	3,684	6,985	10,096	12,296
Tons per acre..	.....	.70	.73	.73	.95	1.06
Pasture....Acres..	.....	.....	22,328	27,356	27,977	29,661
Potatoes....Acres..	.....	540	842	987	927	753
Bushels..	.....	31,287	54,779	75,033	53,896	56,736
Bushels per acre..	.....	57.9	65.0	76.0	58.1	75.4
Orchards....Acres..	.....	2,376	2,825	2,295	2,135	1,624
Apples....Bushels..	.....	74,080	93,934	48,870	37,863	26,278

STARK COUNTY

Location.—Stark County is in the northeastern quarter of the State. Bounded on the north by Summit and Portage; on the east by Mahoning, Columbiana and Carroll; on the south by Carroll and Tuscarawas; on the west by Holmes, Wayne and Summit. Area, 566 square miles. Organized in 1809.

Geology.—The county lies within the area of the lower coal measures, and is a large producer of coal in its western and southern townships. The borings for coal have shown that the Tuscarawas was at one time a far greater river than at present, excavating a broad and deep channel across the county that has since been filled with gravel and sand. The southeastern quarter of the county lies below the limit of glaciation.

Topography.—The surface of the northern half of the county is rolling, that of the southern half is hilly. The Tuscarawas River enters the county at the northwestern corner and flows southeastwardly across the county. Nimishillen Creek flows from north to south across the middle of the county, its east branch draining the northeastern quarter.

Soils.—The larger part of the western half of the county is covered with soils classed with the Wooster series—the drift which has covered this region being of much the same character as that covering Wayne County. In the northeastern quarter the soil is the heavier Trumbull silt loam, and over the non-glaciated district the soil is classed as Dekalb silt loam. In the valleys of the Tuscarawas and Nimishillen are considerable areas of sandy bottom and terrace land.

Agriculture.—Wheat has been the leading crop of the county from its first settlement, the large area of land naturally underdrained by gravel being especially adapted to this crop. The yield per acre has been above the average of the State for the entire period of the 60 years under review, and during the last decade Stark shows a higher average yield of wheat per acre than any other county in the State; Wayne being next, averaging one-tenth of a bushel lower. The yields of corn and oats have been well up to the average, and those of hay somewhat above the average.

Three principal factors have contributed to this outcome, namely:

1. A soil probably not above the average of the State in natural fertility, but with much natural underdrainage.

2. A relatively large maintenance of livestock, for although there has been a great reduction in such stock the number per thousand acres of improved land still remains much larger than is found over the State as an average.

3. A systematic use of commercial fertilizers, the purchases of which averaged 2,332,000 pounds annually during the 'nineties and 5,462,000 pounds during the last decade.

The results attained at the State Experiment Station, which is located on a typical Wooster silt loam soil in the adjoining county of Wayne, has shown, however, that these yields might be very greatly and very profitably increased by a still more liberal use of manure and fertilizers.

STARK COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	52,508	64,031	84,170	94,747	122,987
White	.....	52,190	63,738	83,827	94,346	122,222
Negro	.....	318	292	338	391	752
Foreign born	.....	7,780	8,625	12,087	10,838	17,217
Rural	.....	.....	.....	.....	43,162	43,808
Urban	.....	.....	.....	.....	51,585	79,179

Population of cities or towns, 1910: Canton, 50,217; Alliance, 15,083; Massillon, 13,879; Louisville, 1,678; Navarre, 1,357; Minerva, 1,396; (Stark and Carrol).

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area, Acres	.....	.....	.....	362,240
Land in farms, Acres	341,998	333,189	342,290	335,382
Improved land in farms, Acres	279,962	285,188	281,064	275,214
Woodland in farms, Acres	57,200	48,001	61,226	30,344
Other unimproved land in farms, Acres	4,806			29,824
Total number of farms, Number	4,110	4,156	4,495	4,853
Area of average farm, Acres	83.2	80.2	76.1	69.1
Improved land per farm, Acres	68.1	68.6	62.5	56.7
Value of all property per farm, Dollars	7,118	5,824	5,007	6,855
Value of land and buildings per farm, Dollars	6,547	5,241	4,437	6,071
Value of land and buildings per acre, Dollars	15.93	65.35	58.31	87.86

LIVESTOCK: 10-year average numbers: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Horses, Number	11,451	12,359	13,181	13,720	14,193	10,388
Cattle, Number	28,600	28,719	28,873	30,303	25,526	24,406
Sheep, Number	79,601	119,554	63,420	52,513	33,179	15,687
Hogs, Number	31,816	29,564	28,270	26,142	23,723	18,343
Cattle equivalent, Tatal	51,193	55,990	51,223	51,889	45,409	38,197
Cattle equivalent, Per 1,000 acres	.....	.....	183	182	162	139

FARM CROPS: 10-year averages: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Corn, Acres	19,731	20,497	26,774	27,642	29,788	30,589
Corn, Bushels	556,262	720,650	1,391,598	1,029,134	1,074,901	1,170,928
Corn, Bushels per acre	28.3	35.1	51.2	37.1	36.0	38.3
Oats, Acres	17,836	18,018	27,201	25,893	30,518	30,538
Oats, Bushels	429,094	540,112	852,762	971,256	980,604	1,110,821
Oats, Bushels per acre	24.0	30.0	31.3	37.5	32.1	36.4
Wheat, Acres	46,806	39,280	46,814	56,521	46,916	42,166
Wheat, Bushels	700,741	527,102	773,914	996,408	792,488	805,701
Wheat, Bushels per acre	15.0	13.4	16.5	17.6	16.8	19.1
Rye, Acres	1,501	1,168	520	229	372	263
Rye, Bushels	10,553	13,321	7,208	4,705	3,533	4,302
Rye, Bushels per acre	7.0	11.4	13.9	20.5	9.5	16.4
Meadows, Acres	34,883	24,196	22,723	29,118	38,938	43,972
Meadows, Tons	41,773	31,969	28,025	40,421	52,871	55,954
Meadows, Tons per acre	1.20	1.32	1.23	1.39	1.36	1.27
Clover, Acres	.....	17,046	16,974	18,160	10,389	9,272
Clover, Tons	.....	20,882	20,644	23,095	13,354	12,363
Clover, Tons per acre	.....	1.23	1.22	1.27	1.29	1.33
Pasture, Acres	.....	.....	56,603	50,160	44,210	55,618
Potatoes, Acres	.....	1,365	1,741	2,203	3,174	4,106
Potatoes, Bushels	.....	126,880	165,568	216,472	293,635	416,929
Potatoes, Bushels per acre	.....	92.9	95.2	98.3	92.5	101.5
Orchards, Acres	.....	5,911	6,859	7,042	6,674	5,827
Apples, Bushels	.....	202,874	441,043	409,254	203,708	277,311

SUMMIT COUNTY

Location.—Summit County is in the northeastern quarter of the State. Bounded on the north by Cuyahoga; on the east by Portage and Stark; on the south by Stark; on the west by Wayne and Medina. Area, 408 square miles. Organized in 1840.

Geology.—The greater part of the county is underlaid with the Conglomerate. The southern third is over the lower coal measures, and parts of three of the northern townships are over the Waverly. The entire county is covered with glacial drift.

Topography.—The surface is rolling, with a deep valley with steep sides through which the Cuyahoga River flows northward from Akron. This river, which rises in Geauga County, flows southwestward through Portage into Summit and turns northward at Akron, is the principal drainage outlet of the county. Headwaters of the Tuscarawas rise in the northwestern quarter. Several small lakes are found in the southern townships.

Soils.—The silt loam and gravelly loam of the Wooster series cover the southern half of the county, while the heavier Volusia and Trumbull soils occupy the remainder. A small area of flat, muck land lies west of Akron. The soil conditions of southern Summit County are similar to those found in western Stark.

Agriculture.—Wheat is more largely grown than corn, and its yield is above the average of the State. The large yields for corn shown during the earlier decades probably mean that much of the crop was reported as bushels of ears during that period—this custom being confined to a few of the northeastern counties.

While there has been a large reduction in the total number of cattle during recent years, the number per 1,000 acres of improved land remains larger than in most of the counties of the State, this condition being due in large measure to the demand for milk by the large cities growing up in this region.

Summit has also been a relatively large user of commercial fertilizers, the purchases averaging 1,657,000 pounds annually during the 'nineties and 3,802,000 pounds during the next decade, or the equivalent during the last period of about 170 pounds for each acre sown in wheat.

The county, however, reached its maximum wheat yield during the 'eighties, when the number of livestock was much greater and the use of fertilizers much smaller than during the last decade.

SUMMIT COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	34,674	43,788	54,089	71,715	108,253
White	.....	34,373	43,397	53,535	71,126	107,480
Negro	.....	299	384	551	586	757
Foreign born	.....	6,061	7,071	8,986	10,024	19,961
Rural	.....	.....	.....	.....	21,447	25,756
Urban	.....	.....	.....	.....	50,268	82,497

Population of cities or towns, 1910: Akron, 69,067; Barberton, 9,410; Cuyahoga Falls, 4,020; Kenmore, 1,561; Hudson, 1,021.

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area ..... Acres	.....	.....	.....	261,120
Land in farms ..... Acres	259,404	236,454	238,816	227,405
Improved land in farms ..... Acres	211,031	192,790	162,020	163,191
Woodland in farms ..... Acres	40,242	43,664	76,796	31,952
Other unimproved land in farms ..... Acres	8,131			32,262
Total number of farms ..... Number	2,850	2,840	2,871	2,959
Area of average farm ..... Acres	91.0	83.3	83.2	76.9
Improved land per farm ..... Acres	74.0	67.9	66.4	55.2
Value of all property per farm ..... Dollars	6,443	6,045	5,410	7,239
Value of land and buildings per farm ..... Dollars	5,842	5,452	4,781	6,382
Value of land and buildings per acre ..... Dollars	20.50	65.45	57.46	82.99

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses ..... Number	6,468	7,395	8,235	9,396	9,369	6,131
Cattle ..... Number	22,176	22,680	23,722	22,591	18,322	18,190
Sheep ..... Number	60,000	74,959	27,766	23,463	14,928	5,462
Hogs ..... Number	12,927	11,398	11,303	11,705	9,214	7,258
Cattle equivalent { Total	35,937	38,711	35,864	35,504	30,105	25,593
Cattle equivalent { Per 1 000 acres	.....	.....	170	184	186	157

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn ..... Acres	10,411	11,672	14,589	15,788	18,098	16,142
Bushels	319,988	462,576	907,514	548,482	594,364	571,058
Bushels per acre	30.7	39.6	61.9	34.4	32.8	35.4
Oats ..... Acres	8,785	10,315	13,926	15,036	20,213	18,219
Bushels	220,407	342,352	498,345	570,178	622,680	657,635
Bushels per acre	25.1	33.1	35.7	37.9	30.8	36.1
Wheat ..... Acres	20,532	17,199	20,884	28,589	25,904	21,784
Bushels	313,666	225,297	368,231	559,502	476,281	408,859
Bushels per acre	15.3	13.1	17.6	19.6	18.3	18.8
Rye ..... Acres	958	1,006	345	113	261	268
Bushels	9,678.5	13,003	4,453	1,740	3,027	4,376
Bushels per acre	10.1	12.9	12.9	15.3	11.6	16.3
Meadows ..... Acres	26,206	24,504	22,140	19,293	23,184	22,906
Tons	32,826	30,288	26,231	26,815	30,015	30,432
Tons per acre	1.25	1.23	1.18	1.39	1.30	1.32
Clover ..... Acres	.....	5,875	7,068	11,370	6,750	5,070
Tons	.....	6,825	8,310	14,394	8,806	7,204
Tons per acre	.....	1.16	1.18	1.27	1.30	1.42
Pasture ..... Acres	.....	.....	74,038	57,504	50,174	55,477
Potatoes ..... Acres	.....	1,202	1,437	1,834	2,436	3,678
Bushels	.....	121,247	126,578	170,383	223,126	368,649
Bushels per acre	.....	100.8	88.1	92.9	91.6	100.2
Orchards ..... Acres	.....	5,285	4,667	4,495	3,881	3,009
Apples ..... Bushels	.....	177,691	270,002	269,240	122,575	169,120

TRUMBULL COUNTY

Location.—Trumbull County is on the eastern boundary of the State, with but one county between it and Lake Erie. Bounded on the north by Ashtabula; on the east by Mercer County, Pennsylvania; on the south by Mahoning; on the west by Portage and Geauga. Area, 633 square miles. Organized in 1800.

Geology.—The investigations of the State Geological Survey indicate that Trumbull County was once uniformly covered with the rocks and coal beds of the coal measures, but that these surface rocks have been largely removed by the excavating agencies of the glacial periods, and the basin thus formed filled with the mixture of gravel, sand and clay, known as a glacial drift.

Topography.—The surface of a large part of the county is gently undulating, with considerable areas of level to flat land, especially in the northern part of the county, and smaller areas of steep hillsides along the borders of the streams. The principal drainage channels are several creeks which come into the county from the south to form the Mahoning near Warren; Mosquito Creek, rising in Ashtabula County and flowing southwardly through the middle of Trumbull County into the Mahoning between Warren and Niles; the upper waters of Grand River, flowing northwardly from the northwestern corner of the county into the Lake, and Pymatuning Creek, flowing southwardly near the eastern border of the county.

Soils.—The material fed into the glacial mill, to be ground up and distributed over the surface of Trumbull County as the basis of its soil, has been the sandstones, Conglomerate and shales of the coal measures and the rocks immediately underlying the coal, and the resultant soils have been a series varying from sandy ridges to flat stretches of heavy clay, the whole, however, possessing the characteristic of lime deficiency common to the Volusia type. Over much of the county there is great need of underdrainage. When the forest was first cleared away the decaying tree roots formed channels through which the excess of water escaped to lower levels, but these channels have long since been obliterated by the plow sole. When first brought under cultivation there was a sufficiency of lime in the soil for immediate needs, but no reserve upon which to draw as in the case with soils lying over limestones or those into whose composition limestone detritus has entered largely, as in western Ohio, and consequently the time has come when lime must be supplied artificially if maximum crop production is to be maintained.

Agriculture.—The statistics of crops and livestock show that about half the land of the county is kept in meadows, but the area reported as in clover is relatively very small and decreasing, a condition to be expected on soils of this character when the original supply of lime is exhausted.

The general yield of crops seems to have culminated before the end of the last century, with a downward tendency since.

TRUMBULL COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total		38,659	44,880	42,373	46,591	52,766
White		38,425	44,635	42,176	46,342	52,555
Negro		233	245	195	247	208
Foreign born		8,091	8,688	6,395	6,581	7,808
Rural					27,964	29,588
Urban					18,627	23,178

Population of cities or towns, 1910: Warren, 11,081; Niles, 8,361; Girard, 3,736; Hubbard, 1,699.

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area—Acres				405,120
Land in farms—Acres	396,023	358,980	377,552	365,859
Improved land in farms—Acres	310,112	299,902	240,147	253,073
Woodland in farms—Acres	78,633	59,078	137,405	58,157
Other unimproved land in farms—Acres	7,278			54,629
Total number of farms—Number	3,891	3,940	4,345	4,456
Area of average farm—Acres	101.8	91.1	86.9	82.1
Improved land per farm—Acres	79.7	76.1	55.3	56.8
Value of all property per farm—Dollars	4,892	4,012	3,803	5,178
Value of land and buildings per farm—Dollars	4,273	3,414	3,206	4,451
Value of land and buildings per acre—Dollars	41.70	37.48	36.89	54.21

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses—Number	8,290	9,552	9,649	10,804	11,610	7,777
Cattle—Number	41,282	38,503	38,235	35,318	28,115	26,585
Sheep—Number	60,954	98,562	45,056	59,922	40,968	15,976
Hogs—Number	9,215	7,299	7,129	7,115	6,543	5,776
Cattle equivalent—Total	56,589	58,641	58,103	52,826	44,476	36,537
Cattle equivalent—Per 1,000 acres			171	176	185	144

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn—Acres	16,165	10,363	13,888	13,394	14,168	14,142
Corn—Bushels	344,249	425,634	657,406	408,219	443,790	398,705
Corn—Bushels per acre	30.9	41.1	53.7	30.5	31.2	28.2
Oats—Acres	8,793	10,225	14,722	17,373	19,415	19,928
Oats—Bushels	200,469	270,169	479,676	568,996	625,461	631,286
Oats—Bushels per acre	22.8	26.4	32.5	32.8	32.2	31.7
Wheat—Acres	9,125	5,104	7,255	13,376	14,103	9,653
Wheat—Bushels	112,595	63,371	101,294	200,449	218,035	140,739
Wheat—Bushels per acre	12.3	12.4	13.9	15.0	15.5	14.6
Rye—Acres	2,414	963	461	207	388	377
Rye—Bushels	9,053	10,073	5,069	2,211	3,423	4,802
Rye—Bushels per acre	3.8	10.5	10.9	10.7	8.8	12.7
Meadows—Acres	50,087	50,891	54,658	50,755	48,178	52,552
Meadows—Tons	62,377	59,580	60,324	60,364	60,235	63,668
Meadows—Tons per acre	1.24	1.17	1.10	1.19	1.25	1.21
Clover—Acres		805	1,086	4,791	3,217	1,213
Clover—Tons		1,084	1,414	6,145	4,430	1,805
Clover—Tons per acre		1.35	1.30	1.28	1.38	1.48
Pasture—Acres			130,271	149,429	139,777	151,001
Potatoes—Acres		1,495	1,617	1,994	2,809	3,580
Potatoes—Bushels		41,061	163,490	174,404	289,384	310,424
Potatoes—Bushels per acre		94.4	101.1	87.5	103.1	86.7
Orchards—Acres		5,148	5,494	5,616	5,143	4,600
Apples—Bushels		137,837	297,753	282,847	178,334	220,194

TUSCARAWAS COUNTY

Location.—Tuscarawas County is in the southern part of the northeastern quarter of the State. Bounded on the north by Stark; on the east by Carroll and Harrison; on the south by Guernsey; on the west by Coshocton and Holmes. Area, 555 square miles. Organized in 1808.

Geology.—The larger part of the county lies within the area covered by the lower productive coal measures. The southeastern quarter extends into the barren coal measures. The county lies south of the glacial boundary.

Topography.—Outside of the stream valleys the county is very hilly. The Tuscarawas River, entering the county near the northwest corner and flowing southeasterly until past the middle and then turning to the southwest is the principal drainage channel and flows through a valley averaging about a mile in width. Sugarcreek, in the northwestern quarter of the county; the Connotten and Nimishillen in the northeastern, and the Stillwater and its branches in the southeastern, all have considerable valley land.

Soils.—The predominant soil type, occupying the high land, is the Dekalb silt loam. The river and creek valleys furnish a considerable area of alluvial bottom and terrace land of high natural fertility.

Agriculture.—The total area given to the grain crops remained practically stationary for 50 years, but has fallen off during the last decade, while there has been an increase in the meadows and pastures. The yields of the grains have continued at a low level. The livestock of the county has diminished by the equivalent of 20,000 cattle since the 'sixties, which fact, taken in connection with the increase in area pastured and in the diminishing area in clover, indicates such an exhaustion of the lime supply of the soil that the pastures are not able to furnish their former amount of feed.

The purchase of fertilizers averaged 991,000 pounds annually during the 'nineties and 1,746,000 pounds during the next decade, or enough during the latter period to have furnished only about 73 pounds to each acre sown in wheat if all had been given to that crop. These facts sufficiently explain the low crop yields.

Comparing Tuscarawas with Stark, the same broad valley of the Tuscarawas River crosses both counties. There is more hill land in Tuscarawas than in Stark, but twice as much land is left in pasture in Tuscarawas as in Stark. Nevertheless, the number of livestock has been smaller in Tuscarawas than in Stark by the equivalent of nearly 10,000 cattle during the last decade, or by about 30 cattle to 1,000 acres of improved land throughout the 60 years, while during the last decade Stark County used fertilizers at the rate of 100 pounds per acre of wheat more than were used in Tuscarawas. In experiments of the Experiment Station, widely distributed over the State and continued for 5 to 25 years, 100 pounds of acid phosphate has produced an average increase of more than 4 bushels of wheat.

TUSCARAWAS COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	33,840	40,198	46,618	53,751	57,035
White	.....	33,724	40,052	46,408	53,480	56,831
Negro	.....	116	146	207	264	194
Foreign born	.....	4,636	4,290	4,876	4,660	5,273
Rural	.....	.....	.....	.....	31,112	30,170
Urban	.....	.....	.....	.....	22,639	26,865

Population of cities or towns, 1910: New Philadelphia, 8,542; Canal Dover, 6,621; Urichsville, 4,751; Dennison, 4,008; New Comerstown, 2,943; Mineral City, 1,032.

FARMS: U. S. Census

Farms: U. S. census	1880	1890	1900	1910
Approximate land area.....Acres..	.....	.....	.....	355,200
Land in farms.....Acres..	375,066	338,892	339,786	332,536
Improved land in farms.....Acres..	292,516	272,960	275,206	266,918
Woodland in farms.....Acres..	76,878	} 65,932	64,580	{ 45,931
Other unimproved land in farms.....Acres..	5,672	}		{ 19,687
Total number of farms.....Number..	3,288	3,384	3,581	3,634
Area of average farm.....Acres.	114.1	100.1	94.9	91.5
Improved land per farm.....Acres..	89.0	80.7	76.9	73.4
Value of all property per farm.....Dollars..	5,439	5,188	4,000	5,240
Value of land and buildings per farm.....Dollars.	4,895	4,587	3,438	4,458
Value of land and buildings per acre.....Dollars.	42.90	45.82	36.23	48.72

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Horses.....Number..	9,080	9,523	9,242	8,826	8,680	6,009
Cattle.....Number..	23,834	22,320	22,837	24,333	21,215	18,881
Sheep.....Number..	73,346	139,043	97,864	92,230	47,760	26,844
Hogs.....Number..	30,812	25,466	17,764	16,493	15,229	10,506
Cattle equivalent { Total	43,330	48,294	43,642	44,031	36,194	28,625
Cattle equivalent { Per 1,000 acres	.....	.....	149	161	132	107

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-10
Corn.....Acres..	20,984	20,187	22,937	22,575	22,336	20,344
Bushels..	639,254	639,258	814,414	730,774	701,099	709,400
Bushels per acre..	30.4	31.6	35.8	32.1	31.3	34.9
Oats.....Acres..	11,311	16,560	20,462	17,590	18,777	18,260
Bushels..	314,717	453,489	617,258	505,813	490,084	529,517
Bushels per acre..	27.8	27.4	30.2	28.8	26.0	29.0
Wheat.....Acres..	38,674	28,120	29,547	35,197	30,867	24,097
Bushels..	450,294	310,740	397,120	487,701	429,980	319,976
Bushels per acre..	11.6	11.0	13.4	13.9	13.9	13.3
Rye.....Acres..	4,587	2,234	624	331.4	442	416
Bushels..	28,111	23,030	6,098	3,200.4	4,182	5,033
Bushels per acre..	6,6	10.3	9.8	9.7	9.5	12.1
Meadows.....Acres..	21,266	21,889	23,622	33,138	39,903	43,268
Tons..	25,480	27,400	25,915	39,309	46,398	47,615
Tons per acre..	1.20	1.25	1.17	1.19	1.16	1.10
Clover.....Acres..	.....	7,691	9,789	7,664	3,764	3,200
Tons..	.....	8,120	9,401	8,317	4,113	3,960
Tons per acre..	.....	1.06	.96	1.09	1.09	1.23
Pasture.....Acres..	.....	.....	90,047	116,947	121,027	134,755
Potatoes.....Acres	.....	910	1,086	1,501	2,090	1,837
Bushels..	.....	72,333	97,892	147,976	173,893	174,367
Bushels per acre..	.....	79.5	90.1	98.5	83.1	95.0
Orchards.....Acres..	.....	5,619	6,536	7,172	6,766	5,615
Apples.....Bushels..	.....	185,180	264,296	373,247	159,143	165,179

UNION COUNTY

Location.—Union County is in the southern part of the northwestern quarter of the State. Bounded on the north by Hardin and Marion; on the east by Marion and Delaware; on the south by Madison; on the west by Champaign and Logan. Area, 446 square miles. Organized in 1820.

Geology.—Excepting a small area of Corniferous limestone in the southeastern corner the floor of the county is the Waterlime, which is everywhere covered with glacial drift.

Topography.—The surface of the county is level to gently rolling. The drainage is through numerous small creeks—Rush, Fulton, Bokes, Mill and Darby—all flowing southeasterly, 2 to 6 miles apart, into the Scioto, which runs through Delaware County a few miles east of the Union County line.

Soils.—The soils are the associated Miami clay loam and Clyde clay loam, the latter predominating south of the Darby.

Agriculture.—Corn is the principal crop, occupying more land than the small grains combined, but the yield is below the average of the State. Wheat began and ended the 60-year period with 10-year averages of 11 bushels per acre. The livestock of the county has fallen off by the equivalent of 7,000 cattle since the 'eighties, while the purchase of fertilizers averaged 182,000 pounds during the 'nineties, and 726,000 pounds during the next decade, or enough to furnish each acre of wheat about 45 pounds, if all had been given to that crop.

The two greatest needs of Union County are better drainage and more liberal use of manure and fertilizers. There can be no question that the soil is capable of giving double the yields that are now being obtained from it, but before manure and fertilizers can have their full effect the land must be better drained.

UNION COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total		18,730	22,375	22,860	22,342	21,871
White		18,387	21,971	22,413	21,958	21,607
Negro		343	404	442	384	264
Foreign born		801	805	686	496	355
Rural					19,294	18,295
Urban					3 048	3,576

Population of cities or towns, 1910: Marysville, 3,576; Richwood, 1,729; Plain City, 1,407; (Union and Madison).

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area, Acres				285,440
Land in farms, Acres	262,922	261,123	275,958	269,064
Improved land in farms, Acres	190,234	216,214	227,934	236,904
Woodland in farms, Acres	70,519	44,909	48,424	28,733
Other unimproved land in farms, Acres	2,169			3,427
Total number of farms, Number	2,771	2,798	2,937	2,773
Area of average farm, Acres	94.9	93.3	94.0	97.0
Improved land per farm, Acres	68.7	77.3	77.4	85.4
Value of all property per farm, Dollars	4,800	4,947	4,618	8,798
Value of land and buildings per farm, Dollars	4,114	4,215	3,904	7,452
Value of land and buildings per acre, Dollars	43.35	45.18	41.53	76.83

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Horses, Number	5,352	7,898	8,305	8,695	8,515	7,085
Cattle, Number	13,279	14,699	15,020	15,510	12,614	14,903
Sheep, Number	29,076	68,913	75,857	85,085	49,589	34,418
Hogs, Number	20,002	22,565	26,788	28,842	23,915	28,916
Cattle equivalent, Total	23,539	31,745	33,590	35,598	28,479	28,321
Cattle equivalent, Per 1,000 acres			177	165	125	120

FARM CROPS: Ten-year averages: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Corn, Acres	23,068	28,340	42,903	40,521	43,355	49,973
Corn, Bushels	732,460	890,007	1,560,647	1,384,263	1,442,580	1,784,805
Corn, Bushels per acre	31.7	32.3	35.9	34.1	33.2	35.7
Oats, Acres	3,095	4,286	7,086	5,075	10,509	17,869
Oats, Bushels	44,967	100,598	170,068	138,516	257,633	510,308
Oats, Bushels per acre	14.5	23.5	24.0	27.3	24.5	28.6
Wheat, Acres	8,190	12,433	15,488	27,842	24,005	16,424
Wheat, Bushels	89,678	128,436	191,767	343,206	309,743	181,162
Wheat, Bushels per acre	11.0	10.3	12.4	12.3	12.9	11.0
Rye, Acres	460.5	459	183	108.5	466	1,306
Rye, Bushels	4,799	4,855	2,366	1,074.1	4,230	15,133
Rye, Bushels per acre	8.2	10.6	12.9	9.9	9.1	11.6
Meadows, Acres	12,586	15,159	15,710	21,515	25,690	23,187
Meadows, Tons	14,705	20,653	17,288	24,672	28,890	28,813
Meadows, Tons per acre	1.17	1.36	1.10	1.15	1.12	1.24
Clover, Acres		1,565	2,570	4,518	6,489	12,127
Clover, Tons		1,705	2,733	5,570	8,258	16,003
Clover, Tons per acre		1.09	1.06	1.23	1.27	1.32
Pasture, Acres			54,481	69,577	63,912	94,668
Potatoes, Acres		524	623	729	499	271
Potatoes, Bushels		37,535	45,876	60,567	26,859	18,190
Potatoes, Bushels per acre		65.4	73.6	83.0	53.8	66.5
Orchards, Acres		3,061	3,225	2,779	2,423	1,949
Apples, Bushels		89,745	98,640	94,654	45,250	35,024

VAN WERT COUNTY

Location.—Van Wert County is in the northwestern quarter of the State, on the Indiana line. Bounded on the north by Paulding; on the east by Putnam and Allen; on the south by Auglaize and Mercer; on the west by Adams and Allen Counties, Indiana. Area, 406 square miles. Organized in 1820.

Geology.—The southwestern corner of the county is underlaid with Niagara, the remainder with Waterlime. The entire county is covered with glacial drift.

Topography.—The surface of the county is flat over the northern half, and flat to undulating over the remainder. The drainage is through numerous small creeks which flow northeastwardly into the Auglaize, excepting a small area in the southwestern corner which is crossed by the St. Mary's.

Soils.—The soil of the northern part of the county is the heavy Clyde or Fulton clay that covers Paulding County. South of this the land, although still black, is more loamy, and is classed as Clyde clay loam, with small areas of the yellow Miami clay loam.

Agriculture.—Agriculturally, Van Wert is one of the newer counties of the State, as it is located in the region of flat, black lands which had to be drained by organized effort before crops could be successfully grown.

Corn is the principal crop of the county, occupying about as much land as all the small grains combined, and the acre-yield has steadily increased, decade by decade, until during the last period the average yield for this county has exceeded that of any other county in the State except Miami. The yields of wheat, however, have not kept pace with those of corn, and during the last decade there has been a considerable change from wheat to oats and corn.

The total number of livestock in the county has always been relatively small, and the decrease during the last decade amounts to only about the equivalent of 4,000 cattle; but the number as compared with the improved land shows a much greater falling off, because of the rapid increase in improved land by clearing away the forest and extending the drainage system.

The use of commercial fertilizers has been practically none, and such fertilizers are not likely to prove remunerative on the land more recently brought into cultivation; but the older soils, especially those of the Miami type, will doubtless justify larger use of both fertilizers and manure than has as yet been practiced.

For the county as a whole, extension of drainage is the most pressing need.

VAN WERT COUNTY STATISTICS

POPULATION; U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	15,823	23,028	29,671	30,394	29,119
White	.....	15,619	22,539	29,214	29,983	28,792
Negro	.....	204	476	447	411	327
Foreign born	.....	1,316	1,389	1,438	1,103	787
Rural	.....	.....	.....	.....	21,744	19,480
Urban	.....	.....	.....	.....	8,650	9,639

Population of cities or towns, 1910; Van Wert, 7,157; Delphos, 5,038. (Van Wert and Allen).

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area....Acres..	.....	.....	.....	259,840
Land in farms....Acres..	215,148	232,350	256,014	250,482
Improved land in farms....Acres..	123,436	161,284	211,556	219,045
Woodland in farms....Acres..	89,625	71,066	44,458	30,106
Other unimproved land in farms....Acres..	2,087			1,331
Total number of farms....Number..	2,299	2,947	3,367	2,921
Area of average farm....Acres..	93.6	78.8	76.1	85.8
Improved land per farm....Acres..	53.7	54.7	62.8	75.0
Value of all property per farm....Dollars..	3,560	4,145	4,156	9,617
Value of land and buildings per farm....Dollars..	3,127	3,596	3,572	8,599
Value of land and buildings per acre....Dollars..	33.41	45.63	46.94	100.22

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Horses....Number..	1,845	4,161	6,326	7,187	8,863	7,116
Cattle....Number..	5,960	10,090	13,719	15,738	11,544	11,214
Sheep....Number..	3,695	16,929	14,260	23,464	12,213	10,596
Hogs....Number..	12,564	18,060	21,502	23,639	22,833	21,522
Cattle equivalent {Total	9,431	17,750	23,621	27,635	23,912	21,542
Cattle equivalent {Per 1,000 acres	.....	.....	191	171	113	98

FARM CROPS: Ten-year averages: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Corn....Acres..	6,292	12,177	24,553	32,278	44,740	49,838
Bushels..	167,126	318,261	775,398	1,109,170	1,699,160	2,154,597
Bushels per acre..	26.6	26.1	31.6	34.3	37.9	43.2
Oats....Acres..	1,404	2,383	7,377	7,700	11,979	24,425
Bushels..	20,879	52,308	205,920	250,642	408,630	887,818
Bushels per acre..	14.8	22.0	27.9	32.6	34.1	36.4
Wheat....Acres..	5,395	10,020	13,218	23,361	31,988	22,756
Bushels..	60,325	98,374	169,132	292,140	497,183	327,195
Bushels per acre..	11.1	9.8	12.8	12.5	15.5	14.4
Rye....Acres..	352.5	713	552	1,015	2,251	1,543
Bushels..	3,049	7,200	6,977	17,394	34,534	26,469
Bushels per acre..	8.6	10.1	12.6	17.1	15.3	17.2
Meadows....Acres..	5,218	6,109	9,059	13,191	20,635	23,709
Tons..	6,057	7,752	10,476	16,921	23,763	31,308
Tons per acre..	1.16	1.19	1.15	1.28	1.17	1.32
Clover....Acres..	.....	2,770	3,113	5,252	6,057	9,233
Tons..	.....	3,014	3,205	5,992	7,110	13,068
Tons per acre..	.....	1.09	1.03	1.14	1.16	1.41
Pasture....Acres..	.....	.....	6,835	13,788	16,587	36,402
Potatoes....Acres..	.....	417	759	959	967	855
Bushels..	.....	26,224	52,477	75,961	58,348	62,264
Bushels per acre..	.....	62.9	69.1	79.1	57.3	72.8
Orchards....Acres..	.....	1,959	2,627	2,786	3,372	2,615
Apples....Bushels..	.....	34,136	61,654	81,571	49,495	47,215

VINTON COUNTY

Location.—Vinton County is in the southeastern quarter of the State. Bounded on the north by Hocking; on the east by Athens and Meigs; on the south by Gallia and Jackson; on the west by Ross. Area, 412 square miles. Organized in 1850.

Geology.—The eastern part of the county lies over the Waverly; the western part over the lower coal measures. The geological characteristics are similar to those of Hocking and Jackson Counties. The county lies south of the glacial line.

Topography.—The surface is very hilly, there being no level land except the narrow valleys of some of the streams. The eastern part of the county is drained by upper waters of Raccoon Creek, which flows southwardly into the Ohio; the western part by branches of Salt Creek, a tributary of the Scioto.

Soils.—The Dekalb silt loam is the predominant soil type. Between McArthur and Hamden are a few square miles of rolling, sandy terrace land, and narrow belts of alluvium are found in the creek valleys.

Agriculture.—The statistics show a general decrease in the area given to the cultivated crops and an increase in the meadows and pastures during the 60-year period, while the yield per acre of all the crops remains at too low a point to pay fair wages for production.

The livestock has diminished both in actual number and in proportion to the land in cultivation, while the purchase of commercial fertilizers has diminished from 1,307,000 pounds during the 'nineties to 1,133,000 pounds during the final decade.

In proportion to the total area in crops the use of fertilizers has been approximately the same for both decades, but the quantity used has not been sufficient to counteract the loss of fertility consequent upon the sale of produce instead of feeding it on the farm.

VINTON COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	15,027	17,223	16,045	15,330	13,096
White	.....	14,819	17,011	15,842	15,239	12,883
Negro	.....	208	212	203	91	213
Foreign born	.....	762	633	370	173	101
Rural	.....	.....	.....	.....	15,330	13,096
Urban	.....	.....	.....	.....	.....	.....

Population of cities or towns, 1910: McArthur, 1,107; Hamden, 1,019.

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area, Acres	.....	.....	.....	263,680
Land in farms, Acres	230,410	214,346	226,474	216,347
Improved land in farms, Acres	151,488	145,855	145,559	138,568
Woodland in farms, Acres	72,476	68,491	80,915	60,342
Other unimproved land in farms, Acres	6,446			17,437
Total number of farms, Number	1,840	1,836	2,089	1,823
Area of average farm, Acres	125.2	116.8	108.4	118.7
Improved land per farm, Acres	82.3	79.4	69.7	76.0
Value of all property per farm, Dollars	2,382	2,303	1,792	2,320
Value of land and buildings per farm, Dollars	2,032	1,958	1,383	1,869
Value of land and buildings per acre, Dollars	16.23	16.77	12.76	15.75

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Horses, Number	2,805	3,433	3,582	2,969	2,900	2,118
Cattle, Number	9,189	10,320	10,264	9,030	7,274	6,071
Sheep, Number	14,209	31,388	21,088	41,320	26,320	16,176
Hogs, Number	11,566	9,995	7,847	4,290	3,075	2,160
Cattle equivalent, Total	14,572	17,891	16,740	16,560	13,114	10,023
Cattle equivalent, Per 1,000 acres	.....	.....	110	114	90	72

Farm crops: Ten-year average production: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Corn, Acres	13,018	11,865	14,369	11,530	13,105	11,164
Bushels	356,873	332,427	402,259	265,015	290,708	259,102
Bushels per acre	27.4	27.9	27.5	23.2	22.9	23.2
Oats, Acres	3,572	3,048	3,110	2,074	1,425	1,520
Bushels	27,906	49,778	47,872	30,445	21,208	25,685
Bushels per acre	7.8	16.3	15.4	14.7	14.9	16.9
Wheat, Acres	10,014	7,804	6,968	8,920	8,922	5,279
Bushels	88,611	54,423	52,954	74,785	96,758	50,521
Bushels per acre	8.8	7.0	7.6	8.4	10.8	9.6
Rye, Acres	80	252	135	101	86	108
Bushels	448	1,818	1,055	701	809	853
Bushels per acre	5.6	7.2	7.8	6.9	9.4	7.9
Meadows, Acres	6,958	8,696	9,923	14,007	15,368	16,052
Tons	8,005	8,749	7,879	12,149	11,287	11,982
Tons per acre	1.15	1.01	.79	.87	.73	.74
Clover, Acres	.....	355	727	273	741	370
Tons	.....	86	219	156	597	278
Tons per acre	.....	.24	.30	.57	.81	.75
Pasture, Acres	.....	.....	51,572	87,451	80,969	89,832
Potatoes, Acres	.....	383	514	530	460	341
Bushels	.....	25,960	32,901	32,802	30,387	23,942
Bushels per acre	.....	67.8	64.0	61.9	66.0	70.2
Orchards, Acres	.....	2,168	2,579	3,148	3,666	2,734
Apples, Bushels	.....	84,326	68,625	99,174	55,258	31,516

WARREN COUNTY

Location.—Warren County is in the southwestern quarter of the State. Bounded on the north by Montgomery and Greene; on the east by Clinton; on the south by Clermont and Hamilton; on the west by Butler. Area, 413 square miles. Organized in 1803.

Geology.—The county is built upon Richmond and Point Pleasant limestones of the Cincinnati group, excepting small outcrops of Niagara and Clinton in the northeastern quarter. The entire surface is covered with glacial drift.

Topography.—The surface is level to rolling. The chief drainage channel is the Little Miami River, which enters the county near the northeast corner and flows south and southwest, receiving Caesar's Creek and Todd Fork from the east and Turtle, Muddy and Coleman's Creek from the west. The northwestern corner of the county is drained by Clear Creek, flowing westward into the Great Miami, which crosses that corner of the county.

Soils.—The soils of the northern part of the county belong to the Miami and Bellefontaine series, the gravelly hills giving natural drainage and their surface decomposing into the Bellefontaine soils. In the southeastern quarter the Cincinnati and Clermont silt loams are found, the Clermont plateau extending over a few square miles of the extreme southeastern corner. The broad flood plain of the Great Miami covers a few square miles of the northwestern corner, and the valleys of the Little Miami and its tributaries contain narrow belts of silmilar land.

Agriculture.—Corn is the principal crop, occupying more land than all the small grains combined, and consequently being frequently grown several years in succession on the same land. During the first half of the 60-year period the yield of corn per acre was larger in Warren County than in the average of the State, but many counties have exceeded it during the later periods.

The acre-yields of wheat and hay ended the 60-year period at a lower point than they began.

The livestock of the county has diminished by the equivalent of 7,000 cattle since the 'eighties, or by 20 percent, if measured by its relation to land in cultivation, while the annual purchase of commercial fertilizers averaged 721,000 pounds during the 'nineties and 1,780,000 pounds during the next decade—about enough during the last decade to furnish 16 pounds for each acre in the principal crops, or 66 pounds, if all were given to the wheat crop.

At the Germantown Experiment Farm, which is located on a soil very similar to that of Warren County, the most profitable application of fertilizers has amounted to the equivalent of 227 pounds on every crop, including the hay crops, of a much higher grade than that usually sold. This has raised the average yields to 58 bushels of corn, 21 bushels of wheat and 3,900 pounds of hay per acre, at an annual cost of $3.34 per acre at pre-war prices.

WARREN COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	26,689	28,392	25,468	25,584	24,497
White	.....	25,511	27,109	24,535	24,635	23,768
Negro	.....	1,178	1,283	926	948	729
Foreign born	.....	1,643	1,400	1,141	895	639
Rural	.....	.....	.....	.....	19,993	19,140
Urban	.....	.....	.....	.....	5,591	5,357

Population of cities or towns, 1919: Lebanon, 2,698; Franklin, 2,659; Loveland, 1,421. (Warrren, Clermont and Hamilton).

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area, Acres	.....	.....	.....	264,320
Land in farms, Acres	242,714	235,435	250,003	249,783
Improved land in farms, Acres	193,172	193,924	210,557	205,813
Woodland in farms, Acres	46,172	41,511	39,446	29,734
Other unimproved land in farms, Acres	3,370			14,236
Total number of farms, Number	2,422	2,277	2,514	2,687
Area of average farm, Acres	100.2	103.4	99.4	93.0
Improved land per farm, Acres	79.8	85.2	83.8	76.6
Value of all property per farm, Dollars	6,428	5,346	5,294	7,384
Value of land and buildings per farm, Dollars	5,801	4,709	4,648	6,456
Value of land and building per acre, Dollars	57.89	45.54	46.76	69.42

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Horses, Number	8,979	10,239	9,636	9,634	9,764	7,259
Cattle, Number	16,887	14,648	14,644	15,396	12,193	12,609
Sheep, Number	22,653	20,349	15,832	18,877	13,629	6,259
Hogs, Number	37,155	33,393	36,525	26,241	20,547	19,133
Cattle equivalent, Total	31,847	30,261	29,516	29,542	25,375	22,407
Cattle equivalent, Per 1,000 acres	.....	.....	153	152	121	109

FARM CROPS: Ten-year averages: Ohio statistics

	180–59	1860–69	1870–79	1880–89	1890–99	1900–09
Corn, Acres	40,732	42,928	53,934	46,973	45,199	45,621
Corn, Bushels	1,641,281	1,611,291	2,192,856	1,737,635	1,622,255	1,626,172
Corn, Bushels per acre	40.4	37.4	40.9	36.8	35.1	35.7
Oats, Acres	9,053	10,165	11,134	10,384	8,022	9,914
Oats, Bushels	116,771	246,242	231,937	265,573	184,601	263,019
Oats, Bushels per acre	12.9	24.2	20.8	25.6	23.0	26.5
Wheat, Acres	25,911	28,890	22,534	32,133	33,258	27,048
Wheat, Bushels	379,809	334,259	294,094	386,860	459,244	376,189
Wheat, Bushels per acre	14.7	11.6	13.0	12.0	13.8	13.9
Rye, Acre	266.5	308	330	101	695	993
Rye, Bushels	2,419	2,851	3,165	701	3,728	10,143
Rye, Bushels per acre	9.1	9.3	9.6	6.9	5.4	10.2
Meadows, Acres	8,346	10,586	11,081	14,609	18,829	18,958
Meadows, Tons	9,117	11,381	11,173	15,707	19,293	18,791
Meadows, Tons per acre	1.09	1.08	1.01	1.07	1.05	.99
Clover, Acres	.....	3,628	6,119	10,170	11,567	9,234
Clover, Tons	.....	1,055	1,930	3,585	7,730	6,907
Clover, Tons per acre	.....	.29	.31	.35	.67	.74
Pasture, Acres	.....	.....	34,732	32,125	35,623	58,382
Potatoes, Acres	.....	1,175	1,485	1,311	836	540
Potatoes, Bushels	.....	74,275	91,164	72,211	58,739	25,140
Potatoes, Bushels per acre	.....	63.2	61.3	55.1	70.2	46.5
Orchards, Acres	.....	6,353	6,052	3,750	3,182	1,578
Apples, Bushels	.....	40,779	101,595	82,003	53,686	14,082

WASHINGTON COUNTY

Location.—Washington County is in the southeastern quarter of the State, on the Ohio River. Bounded on the north by Morgan, Noble and Monroe; on the east and south by the Ohio River and Tyler, Pleasants and Wood Counties, West Virginia, and Athens County, Ohio; on the west by Athens and Morgan Counties. Area, 630 square miles. Organized in 1788, the first county organized in the State.

Geology.—The surface rocks are those of the upper coal measures, and are chiefly sandstones. The county lies south of the limit of glaciation.

Topography.—The western part of the county is rolling to hilly; the eastern is very hilly. In addition to the Ohio River, which forms the southeastern boundary of the county for nearly 54 miles, it is crossed near the middle from northwest to southeast by the Muskingum River. East of the Muskingum are Duck Creek and the Little Muskingum, and west to the Little Hocking, all flowing into the Ohio.

Soils.—The upland soils belong to the Meigs series, including Dekalb silt loam and Upshur clay, the former predominating over the western half of the county. The Muskingum occupies a valley half a mile to a mile in width, expanding to several miles near the mouth, and the Ohio is bordered by a belt of bottom and terrace land half a mile or more in width, all of which furnishes an area of sheltered alluvium and terrace land which has been found to be especially adapted to the growing of truck crops.

Agriculture.—The upland agriculture is that common to the hill counties of the State, except that orcharding has been more largely developed in Washington than elsewhere, apples having been extensively grown in pioneer days to be shipped down the river in flatboats. The yields of corn have been stationary throughout the 60 years of record. The yields of wheat show a slight increase, while those of the meadows seem to be decreasing.

The yields of the orchards fell off rapidly during the last two decades, and orchard owners were seriously considering the abandonment of apple production; but in 1909 and 1910 experiments, conducted in the county by the State Experiment Station in fertilizing and spraying orchards, produced such immediate and striking results as to revive the interest in this industry, and the outcome has been an average production, during the 6 years, 1911-1916, of 284,000 bushels of apples, grown on 5,900 acres of land, or a larger rate of production per acre than had ever before been recorded.

A county experiment farm has recently been established on the upland of eastern Washington County, and a truck experiment farm in the Muskingum Valley. It is hoped that these may prove to be as useful to the general farmer and truck grower as the orchard experiments have been to the apple grower, but their work will necessarily require longer time for its development. In the case of the orchards the trees were already on the ground and ready for work as soon as the proper conditions were given.

WASHINGTON COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	40,609	43,244	42,380	48,245	45,422
White	.....	39,551	42,000	40,947	46,644	44,041
Negro	.....	1,058	1,243	1,412	1,597	1,378
Foreign born	.....	3,930	3,052	2,300	1,697	1,147
Rural	.....	.....	.....	.....	13,348	32,499
Urban	.....	.....	.....	.....	.....	12,923

Population of cities or towns, 1910; Marietta, 12,923; Belpre, 1,249

FARMS: U. S. Census

Farms: U. S. census	1880	1890	1900	1910
Approximate land area—Acres	.....	.....	.....	403,200
Land in farms—Acres	347,316	376,349	374,694	368,307
Improved land in farms—Acres	252,603	268,117	280,691	257,759
Woodland in farms—Acres	86,677	108,232	94,003	68,304
Other unimproved land in farms—Acres	8,036			42,244
Total number of farms—Number	4,257	4,307	4,478	4,187
Area of average farm—Acres	81.6	87.4	83.7	88.0
Improved land per farm—Acres	59.3	62.3	62.7	61.6
Value of all property per farm—Dollars	7,391	2,712	2,639	3,530
Value of land and buildings per farm—Dollars	2,323	2,328	2,213	2,963
Value of land and buildings per acre—Dollars	40.72	26.64	26.44	33.67

LIVESTOCK: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses—Number	5,867	7,868	8,354	7,852	8,054	5,461
Cattle—Number	17,460	20,041	20,165	20,506	16,783	14,299
Sheep—Number	34,412	56,541	47,187	81,838	52,480	28,110
Hogs—Number	17,318	17,047	15,716	11,743	9,081	5,061
Cattle equivalent—Total	28,500	35,268	34,809	37,716	30,993	23,077
Cattle equivalent—Per 1,000 acres	.....	.....	138	141	110	90

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Corn—Acres	19,430	23,703	25,460	24,239	23,356	19,974
Bushels	581,418	676,108	763,748	713,673	666,012	586,112
Bushels per acre	30.0	28.5	29.5	29.4	28.5	29.4
Oats—Acres	7,475	9,011	10,263	7,956	7,385	7,327
Bushels	78,484	168,257	172,170	157,076	137,373	136,132
Bushels per acre	10.5	18.7	16.8	19.7	18.6	18.6
Wheat—Acres	25,299	21,678	24,553	30,839	30,675	19,117
Bushels	278,632	171,720	264,922	347,100	396,150	233,910
Bushels per acre	11.0	7.9	10.8	11.2	12.9	12.2
Rye—Acres	528	1,369	990	460	328	160
Bushels	3,559	11,468	8,719	4,003	3,645	1,578
Bushels per acre	6.7	8.4	8.8	8.7	11.1	9.9
Meadows—Acres	14,710	18,259	20,104	27,199	33,844	34,497
Tons	17,507	19,776	19,159	30,491	31,675	31,189
Tons per acre	1.19	1.08	.96	1.12	.92	.90
Clover—Acres	.....	2,104	2,739	5,567	2,701	1,203
Tons	.....	1,647	2,171	5,666	2,796	1,456
Tons per acre	.....	.78	.79	1.02	1.03	1.21
Pasture—Acres	.....	.....	81,219	129,166	133,895	138,987
Potatoes—Acres	.....	1,994	2,143	2,104	2,043	1,826
Bushels	.....	138,416	135,454	139,255	138,033	164,948
Bushels per acre	.....	69.4	63.2	68.0	67.6	90.3
Orchards—Acres	.....	7,818	9,800	10,770	11,274	8,361
Apples—Bushels	.....	336,419	248,916	374,193	168,662	90,980

WAYNE COUNTY

Location.—Wayne County is in the northeastern quarter of the State. Bounded on the north by Medina and Summit; on the east by Summit and Stark; on the south by Holmes; on the west by Ashland. Area, 557 square miles. Organized in 1796.

Geology.—The surface rocks are the shales and sandstones of the Upper Waverly over the northwestern half of the county, with the Conglomerate and lower coal measures over the southeastern half. The entire county is covered with glacial drift.

Topography.—The general topography is level to rolling. The streams have cut their channels to the depth of 150 to 250 feet through the middle and southern parts of the county. The drainage is through Killbuck Creek, which flows through the western half of the county from north to south, Chippewa Creek in the northeastern quarter, Sugar Creek, Apple Creek and Salt Creek in the southeastern quarter and Muddy Fork in the extreme western part.

Soils.—The soils belong to the Wooster series over the larger part of the county, but include areas of slightly heavier soil classed as Volusia silt loam in the northeastern third. The drift sheet is generally thin, and the soil has been largely modified by the underlying rock, which on the hillsides is often near enough to the surface to furnish natural underdrainage. On the more level lands of the county the drainage is less perfect.

Agriculture.—Wheat has been the leading crop in Wayne County since its first reclamation from the forest, and the yield has been relatively high. Starting at 12½ bushels per acre during the 'fifties, the yield rose to more than 16 bushels in 20 years, where it remained stationary for 30 years, and then rose to 19 bushels, the largest yield in the State, excepting that of the adjoining county of Stark, with very similar soil conditions.

There has been a considerable decrease in the total number of livestock in the county, but the relative number as compared with the area in cultivation remains large, as compared with many other counties.

The purchase of commercial fertilizers has amounted to 3,582,000 pounds per annum during the 'nineties and to 7,960,000 pounds during the next decade, Wayne being a larger purchaser of such fertilizers than any other county in the State.

Computing the value of produce at prices prevailing previous to the European war, the value of Wayne County's crops was half a million dollars greater per annum during the 10 years, 1900-1909, than during any previous 10-year period.

The 25 years' work of the State Experiment Station in this county, however, has shown that a very much larger yield and income is possible from Wayne County's farms than has yet been obtained.

WAYNE COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	35,116	40,076	39,005	37,870	38,058
White	.....	35,061	39,892	38,940	37,800	37,983
Negro	.....	55	183	63	69	70
Foreign born	.....	1,507	1,608	1,384	2,120	2,051
Rural	.....	.....	.....	.....	31,807	28,821
Urban	.....	.....	.....	.....	6,063	9,237

Population of cities or towns, 1910: Wooster, 6,136; Orrville, 3,101; Shreve, 1,016.

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area.....Acres..	.....	.....	.....	356,480
Land in farms.....Acres..	321,817	334,216	338,149	336,807
Improved land in farms.....Acres..	246,137	271,167	272,280	269,894
Woodland in farms.....Acres..	72,180	63,049	65,869	43,857
Other unimproved land in farms.....Acres..	3,500			23,056
Total number of farms.....Number..	3,659	3,795	3,943	3,955
Area of average farm.....Acres..	88.0	88.1	85.8	85.2
Improved land per farm.....Acres..	67.3	71.5	69.1	68.2
Value of all property per farm.....Dollars.	7,693	6,426	5,345	7,842
Value of land and buildings per farm.....Dollars..	7,032	5,735	4,642	6,740
Value of land and buildings per acre.....Dollars..	79.91	65.17	54.10	79.15

LIVESTOCK: Ten-year averages: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Horses.....Number..	11,391	12,016	11,573	11,535	11,643	9,935
Cattle.....Number..	27,370	29,862	29,713	28,052	22,258	22,854
Sheep.....Number..	81,847	105,289	51,822	39,360	29,656	18,370
Hogs.....Number..	30,693	31,612	28,787	27,484	23,800	24,027
Cattle equivalent {Total	50,015	55,568	49,347	46,272	39,247	37,029
Cattle equivalent {Per 1,000 acres	.....	.....	200	171	144	137

FARM CROPS: Ten-year averages

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Corn.....Acres..	20,641	24,217	30,032	30,189	35,083	36,572
Bushels..	560,547	777,919	1,237,589	1,035,890	1,180,766	1,394,561
Bushels per acre..	26.8	32.1	41.2	34.3	33.6	38.2
Oats.....Acres..	19,198	19,989	24,285	22,519	25,241	29,602
Bushels..	486,787	640,527	838,010	817,430	888,872	1,143,828
Bushels per acre..	25.4	32.0	34.5	36.3	35.2	38.6
Wheat.....Acres.	38 557	33,962	41,208	55,739	52,077	44,929
Bushels..	436,624	447,546	694,276	942,013	841,207	854,295
Bushels per acre..	12.6	13.2	16.8	16.9	16.1	19.0
Rye.....Acres..	1,328	1,131	426	173	249	359
Bushels..	11,462	13,347	5,675	2,220	2,761	5,403
Bushels per acre..	8.6	11.8	13.3	12.8	11.1	15.1
Meadows.....Acres..	31,910	27,549	21,762	23,547	30,769	32,609
Tons..	41,092	39,758	27,101	31,981	43,149	44,967
Tons per acre..	1.29	1.44	1.25	1.36	1.40	1.38
Clover.....Acres..	.....	13,335	17,846	18,968	15,763	18,258
Tons..	.....	14,696	20,841	24,416	20,620	25,815
Tons per acre	.....	1.10	1.17	1.29	1.31	1.41
Pasture.....Acres	.....	.....	48,508	39,403	32,075	50,880
Potatoes.....Acres	.....	1,296	1,675	1,892	2,330	5,104
Bushels	.....	107,036	151,564	156,236	188,084	578,270
Bushels per acre	.....	82.7	90.5	82.6	80.7	112.4
Orchards.....Acres..	.....	6,220	6,536	6,142	5,674	4,770
Apples.....Bushels..	.....	265,047	396,830	307,176	147,752	193,602

WILLIAMS COUNTY

Location.—Williams County is the northwestern county of the State. Bounded on the north by Hillsdale County, Michigan; on the east by Fulton and Henry; on the south by Defiance; on the west by Dekalb and Steuben Counties, Indiana. Area, 411 square miles. Organized in 1824.

Geology.—The southeastern part of the county is underlaid with Huron shale; the remainder of the county is supposed to overlie Waverly rocks. The entire county is covered with a heavy sheet of glacial drift.

Topography.—The surface of the county is level to gently rolling. A buried glacial moraine crosses the middle of the county as a broad, low ridge, running northeast to southwest. This ridge is paralleled on the east by beaches of the ancient lake and on the west by the St. Joseph River, the chief drainage channel of the county, which joins the Maumee at Ft. Wayne, Indiana. East of the ridge the drainage is collected by Bean River and its tributaries—Beaver and Lick Creeks—and carried to the Maumee at Defiance.

Soils.—The soil of the ridges is generally sandy; the southeastern quarter of the county is part of the Maumee Basin and the soil is the dark clay, with occasional sandy ridges, which is generally found in that region. West of the ridges is the terrace and bottom land of the St. Joseph Valley and beyond that alternations of clay loam and sandy loam.

Agriculture.—Agriculturally, Williams is one of the newer counties of the State, and much drainage is yet required to bring its land into full production. Neither corn, oats nor wheat has yet reached the average yield of the State. There has been a reduction equivalent to about 5,000 cattle in the livestock of the county during the last 20 years, while the annual purchase of commercial fertilizers amounted to only 100,599 pounds during the 'nineties, and 421,482 pounds during the last decade.

WILLIAMS COUNTY STATISTICS

POPULATION; U. S. Census

	1860	1870	1880	1890	1900	1910
Total		20,991	23,821	24,897	24,953	25,198
White		20,949	23,787	24,862	24,899	25,193
Negro		42	34	35	54	5
Foreign born		1,507	1,608	1,384	1,003	871
Rural					21,822	18,798
Urban					3,131	6,400

Population of cities or towns, 1910: Bryan, 3,641; Montpelier, 2,759; Edgerton, 1,072; Stryker, 1,026.

FARMS U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area—Acres				263,040
Land in farms—Acres	258,858	249,365	253,228	260,255
Improved land in farms—Acres	169,984	186,525	195,074	208,341
Woodland in farms—Acres	83,526	62,840	58,154	35,171
Other unimproved land in farms—Acres	6,348			16,743
Total number of farms—Number	3,019	2,974	2,833	2,913
Area of average farm—Acres	85.7	83.8	89.4	89.3
Improved land per farm—Acres	56.0	62.7	68.9	71.5
Value of all property per farm—Dollars	4,024	4,650	4,480	7,593
Value of land and buildings per farm—Dollars	3,565	4,088	3,825	6,486
Value of land and buildings per acre—Dollars	41.60	48.78	42.79	72.63

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Horses—Number	2,653	5,874	7,454	7,258	7,493	6,151
Cattle—Number	9,241	13,815	16,516	15,899	11,494	13,284
Sheep—Number	8,866	41,535	26,970	33,269	28,650	23,717
Hogs—Number	10,795	17,718	20,481	23,264	16,814	19,608
Cattle equivalent—Total	13,860	25,614	28,715	28,810	23,533	23,768
Cattle equivalent—Per 1,000 acres			170	154	121	114

FARM CROPS: Ten-year average: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Corn—Acres	8,422	13,869	21,733	25,743	25,733	30,314
Corn—Bushels	220,797	411,566	745,400	810,501	815,535	1,145,285
Corn—Bushels per acre	28.0	29.5	34.7	31.5	31.6	37.8
Oats—Acres	3,462	6,091	12,960	15,616	21,275	25,900
Oats—Bushels	66,302	165,073	400,399	537,095	665,319	867,438
Oats—Bushels per acre	19.1	27.1	30.9	34.4	31.3	33.5
Wheat—Acres	9,118	17,358	23,792	28,790	26,778	17,608
Wheat—Bushels	99,732	212,647	342,191	414,860	379,047	239,555
Wheat—Bushels per acre	10.9	12.3	14.4	14.4	14.1	13.6
Rye—Acres	1,152	229	86	95	657	470
Rye—Bushels	12,492	2,775	1,027	1,121	6,565	6,565
Rye—Bushels per acre	10.8	12.1	11.9	11.8	10.0	13.9
Meadows—Acres	12,616	10,667	11,403	16,554	21,890	25,029
Meadows—Tons	16,269	13,415	13,332	19,480	26,234	32,903
Meadows—Tons per acre	1.29	1.26	1.17	1.18	1.20	1.31
Clover—Acres		7,945	9,519	12,040	10,283	13,584
Clover—Tons		9,016	9,698	12,307	11,352	16,575
Clover—Tons per acre		1.13	1.02	1.02	1.10	1.22
Pasture—Acres			18,467	30,711	36,635	81,444
Potatoes—Acres		703	929	1,063	1,194	742
Potatoes—Bushels		62,851	84,605	85,930	78,672	67,399
Potatoes—Bushels per acre		89.4	91.1	80.9	65.8	90.8
Orchards—Acres		3,897	4,431	5,136	4,618	3,740
Apples—Bushels		80,309	165,964	233,385	73,024	87,688

WOOD COUNTY

Location.—Wood County is in the northwestern quarter of the State. Bounded on the north by Lucas; on the east by Ottawa, Sandusky and Seneca; on the south by Hancock; on the west by Henry and Lucas. Area, 612 square miles. Organized in 1820.

Geology.—The underlying rocks are limestones, belonging to the Cornif-erous in the northwestern corner, and Waterlime and Niagara in alternations over the remainder of the county. The entire rock surface is overlaid with glacial drift.

Topography.—The surface is flat, with small knolls or ridges marking ancient lake beaches, the county lying within the limits of the ancient lake extension. The Maumee River is the northwestern boundary of the county, and the interior is drained by headwaters of Toussaint Creek and the Portage River.

Soils.—The predominant soil type is the Clyde clay loam, alternating with belts of Clyde sandy loam and ridges of Dunkirk sand.

Agriculture.—Corn is the leading crop of the county, occupying more land than all the small grains combined and averaging a total yield of more than 3,000,000 bushels during the last decade. Wheat has stood next to corn in the area occupied until the last decade, when a large transfer was made to oats and corn.

The yield of corn has increased steadily during the 60 years, but has not quite reached the average of the State. That of wheat has averaged with the yields of the northern third of the State.

The number of livestock has diminished, while the annual purchase of fertilizers has averaged 429,000 pounds during the 'nineties and 537,000 pounds during the last decade.

WOOD COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total	.....	24,596	34,022	44,392	51,555	46,330
White	.....	24,553	33,888	44,199	51,414	46,180
Negro	.....	43	132	187	137	150
Foreign born	.....	3,151	3,85 2	4,326	3,676	3,198
Rural	.....	.....	.....	.....	42,927	38,605
Urban	.....	.....	.....	.....	8,628	7,725

Population of cities or towns, 1910; Bowling Green, 5,222; North Baltimore, 2,503; Perrysburg, 1,913; Pemberville, 1,006.

FARMS: U. S. Census

Farms: U. S. Census	1880	1890	1900	1910
Approximate land area....Acres..	.....	.....	.....	391,680
Land in farms....Acres..	292,717	318,039	367,527	360,008
Improved land in farms....Acres..	181,469	234,118	296,928	308,497
Woodland in farms....Acres..	105,614	83,921	70,599	37,916
Other unimproved land in farms....Acres..	5,634			13,595
Total number of farms....Number..	3,911	4,289	4,781	4,357
Area of average farm....Acres..	74.8	74.2	76.9	82.6
Improved land per farm....Acres..	46.4	54.5	62.1	70.8
Value of all property per farm....Dollars..	3,863	5,203	5,482	9,501
Value of land and buildings per farm....Dollars..	3,427	4,615	4,886	8,504
Value of land and buildings per acre....Dollars.	45.82	62.20	63.55	102.95

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Horses....Number..	3,455	6,829	9,315	10,166	11,197	9,035
Cattle....Number..	11,081	16,279	19,421	19,535	16,131	16,594
Sheep....Number..	10,176	31,874	25,154	26,828	24,586	11,592
Hogs....Number..	11,616	16,121	24,494	29,238	24,513	27,413
Cattle equivalent: Total	16,715	27,908	33,701	35,308	32,238	29,530
Cattle equivalent: Per 1,000 acres	.....	.....	186	151	109	96

FARM CROPS: Ten-year averages: Ohio statistics

	1850–59	1860–69	1870–79	1880–89	1890–99	1900–09
Corn....Acres..	13,041	20,014	43,407	50,307	66,133	83,383
Bushels..	353,437	563,790	1,481,276	1,767,605	2,354,269	3,012,739
Bushels per acre..	27.2	28.2	34.1	35.1	35.5	36.1
Oats....Acres..	3,425	6,403	14,267	17,914	27,442	48,149
Bushels..	62,188	167,679	444,860	535,414	909,921	1,679,392
Bushels per acre..	18.1	26.2	31.2	29.9	33.2	34.9
Wheat....Acres..	5,549	11,953	19,176	34,311	38,445	26,460
Bushels..	60,922	152,950	308,428	550,154	657,427	434,701
Bushels per acre..	11.0	12.8	16.1	16.1	17.1	15.4
Rye....Acres..	567.5	217	407	3,262	1,456	805
Bushels..	5,760.5	2,491	6,920	64,290	22,216	15,602
Bushels per acre..	10.2	11.5	17.0	19.7	15.3	19.4
Meadows....Acres..	10,296	12,821	14,034	16,321	21,681	24,231
Tons..	14,904	17,132	17,910	20,935	27,830	29,891
Tons per acre..	1.45	1.34	1.27	1.28	1.28	1.23
Clover....Acres..	.....	3,121	5,796	8,569	9,407	11,464
Tons..	.....	3,690	6,342	8,844	10,215	13,057
Tons per acre..	.....	1.18	1.10	1.03	1.09	1.14
Pasture....Acres..	.....	.....	18,381	20,226	26.140	44,861
Potatoes....Acres..	.....	944	1,576	1,587	1,461	1,080
Bushels..	.....	83,863	137,434	139,123	100,811	100,741
Bushels per acre..	.....	87.7	87.2	87.7	69.0	93 2
Orchards....Acres..	.....	3,514	4,715	5,136	5,100	3,579
Apples....Bushels..	.....	96,742	172,153	198,768	91,704	85,149

WYANDOT COUNTY

Location.—Wyandot County is in the northwestern quarter of the State. Bounded on the north by Seneca; on the east by Crawford; on the south by Marion and Hardin; on the west by Hardin and Hancock. Area, 406 square miles. Organized in 1845.

Geology.—The Corniferous, Waterlime and Niagara limestones are the surface rocks, the Corniferous and Niagara in nearly equal belts on the east and west sides of the county and the Waterlime occupying the middle half. The rock floors are everywhere covered with glacial drift.

Topography.—The surface is level to gently rolling. The drainage is northward, that of the eastern half of the county through the Sandusky River; that of the western half through Tymochtee Creek, which joins the Sandusky near the northern limit of the county.

Soils.—The soils are the Miami and Clyde clay loams, with narrow bands of alluvium in the stream valleys.

Agriculture.—Corn on the one hand and the small grains on the other have occupied approximately equal areas, with yields averaging with those of the northern third of the State. The number of livestock has decreased by the equivalent of about 6,000 cattle since the 'eighties, and the annual purchase of fertilizers has amounted to 261,000 pounds during the 'nineties and 1,411,000 pounds during the last decade.

WYANDOT COUNTY STATISTICS

POPULATION: U. S. Census

	1860	1870	1880	1890	1900	1910
Total		18,553	22,395	21,722	21,125	20,760
White		18,462	22,222	21,638	21,059	20,736
Negro		82	171	82	63	21
Foreign born		1,711	1,732	1,516	1,068	771
Rural					17,770	16,981
Urban					3,355	3,779

Population of cities or towns, 1910: Upper Sandusky, 3,779; Carey, 2,225.

FARMS: U. S. Census

FARMS: U. S. Census	1880	1890	1900	1910
Approximate land area—Acres				259,840
Land in farms—Acres	251,046	241,486	248,222	242,102
Improved land in farms—Acres	183,738	199,596	208,246	208,790
Woodland in farms—Acres	59,188	41,890	39,976	22,605
Other unimproved land in farms—Acres	8,120			10,707
Total number of farms—Number	2,321	2,309	2,389	2,321
Area of average farm—Acres	108.2	104.6	103.9	104.3
Improved land per farm—Acres	79.2	86.4	87.2	90.0
Value of all property per farm—Dollars	5,547	6,047	5,485	9,913
Value of land and buildings per farm—Dollars	4,968	5,277	4,755	8,564
Value of land and buildings per acre—Dollars	45.91	50.45	45.77	82.11

LIVESTOCK: Ten-year average numbers: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	1890-99	1900-09
Horses—Number	4,416	6,495	7,458	7,472	7,633	6,098
Cattle—Number	13,972	14,210	14,965	14,567	11,121	12,191
Sheep—Number	50,006	77,873	69,838	77,486	69,190	56,023
Hogs—Number	19,600	19,584	22,380	24,628	21,988	22,979
Cattle equivalent—Total	25,349	30,451	31,645	32,250	27,872	26,189
Cattle equivalent—Per 1,000 acres			172	162	134	125

FARM CROPS: Ten-year averages: Ohio statistics

	1850-59	1860-69	1870-79	1880-89	89-1099	1900-09
Corn—Acres	16,549	21,773	29,595	32,739	33,641	37,628
Corn—Bushels	468,454	601,222	1,090,693	1,116,349	1,181,876	1,437,014
Corn—Bushels per acre	28.5	28.4	36.9	34.0	35.1	38.2
Oats—Acres	4,981	5,138	8,623	8,676	11,204	16,778
Oats—Bushels	92,257	132,353	308,135	283,365	344,655	584,183
Oats—Bushels per acre	18.5	25.8	35.7	32.7	30.8	34.8
Wheat—Acres	8,405	15,709	23,451	32,862	27,672	24,149
Wheat—Bushels	105,980	204,314	384,642	491,055	440,560	374,359
Wheat—Bushels per acre	12.6	13.0	16.4	14.9	15.9	15.5
Rye—Acres	921.5	307	123	346.3	439	475
Rye—Bushels	8,273	3,889	1,824	4,528.7	4,452	3,057
Rye—Bushels per acre	9.0	12.7	14.8	13.1	10.1	6.4
Meadows—Acres	13,683	15,499	14,041	15,175	21,086	21,248
Meadows—Tons	15,870	19,321	17,202	18,551	25,353	28,132
Meadows—Tons per acre	1.16	1.25	1.23	1.22	1.20	1.32
Clover—Acres		3,575	6,293	8,334	8,571	12,321
Clover—Tons		2,713	6,780	9,153	10,733	15,898
Clover—Tons per acre		.76	1.07	1.10	1.25	1.21
Pasture—Acres			43,244	55,021	47,124	59,962
Potatoes—Acres		647	918	1,110	919	649
Potatoes—Bushels		46,210	72,856	91,124	63,086	54,749
Potatoes—Bushels per acre		71.4	79.3	82.0	68.6	84.4
Orchards—Acres		4,288	3,576	3,244	2,826	2,154
Orchards—Apples—Bushels		72,519	165,503	111,648	64,035	51,440

PRINCIPAL SOIL TYPES OF OHIO

The following brief description of the principal soil types of Ohio is abridged from a report of the Bureau of Soils, United States Department of Agriculture, on a **Reconnaissance Soil Survey of Ohio,** made jointly in 1912 by that Bureau and the Ohio Experiment Station.

A line drawn from Sandusky through Columbus to the western boundary of Scioto County approximately separates the limestones, which are the surface rocks over all the state west of this line except a small area in the northwestern corner, from the shales and sandstones which form the surface over the eastern part of the state, excepting small areas of limestones in the coal measures.

Another line, entering the state in Columbiana County a few miles north of the entrance of the Ohio River, running westward to the western boundary of Holmes County, thence southward to New Lexington, Perry County, thence southwestward to the Ohio River, south of Georgetown, Brown County, marks the boundary between the glaciated area of the state and that in which the soils outside of the stream valleys have been formed by the decomposition of the underlying rocks.

GLACIATED LIMESTONE SOILS

Practically the whole of the limestone area has therefore been glaciated, but the southward moving ice has picked up, ground together and redeposited the rock floor over which it has traveled, adding a small percentage of granitic material from farther north, so that the soil resulting from the decomposition of the glacial drift in this region has been abundantly stocked with lime.

The Miami series.—The prevailing soil type over this region is a gray to light brown surface soil with yellow to mottled gray and yellow subsoil, to which the name Miami has been given. The Miami soils vary from a sandy loam through silt and clay loam to a heavy clay, the sandy and clay soils occupying comparatively small areas, while the Miami silt loam and the Miami clay loam, which shade into each other by gradations which only a soil expert will distinguish, cover the greater part of the area. A characteristic feature of the Miami soils is the presence of limestone fragments, either angular or rounded, especially in the subsoil. The Miami soils as a rule have been deposited in sheets of drift of considerable thickness, in which sand, silt and clay intermingled have formed a subsoil nearly impervious to water, so that drainage is everywhere

necessary to bring them to their maximum productiveness; but when drained, their abundant store of all the mineral elements of fertility makes them the foundation of a prosperous agriculture.

Geological map of Ohio by J. A. Bownocker, state geologist, 1909

The dark line has been added to mark the division between the limestones to the west and Waverly and Maxville shales to the east as determined by Bownocker. (From Report of Bureau of Soils, U. S. Dept. Agr., 1912.)

The Bellefontaine series.—As the glacier slowly retreated northward, stopping here and there to rest through a cycle of colder seasons, it left at its feet ridges of gravel and coarse sand, the surface of which has weathered into brown to reddish-brown soils containing many gravel fragments and naturally drained by the gravel below. Similar deposits were formed along their sides by the tor-

rents which flowed from the foot of the glacier. Warm and responsive to good treatment, these soils have been highly valued, and if it be found that they show signs of exhaustion at an earlier date than the heavier soils, it will also be found that they will respond again to intelligent treatment.

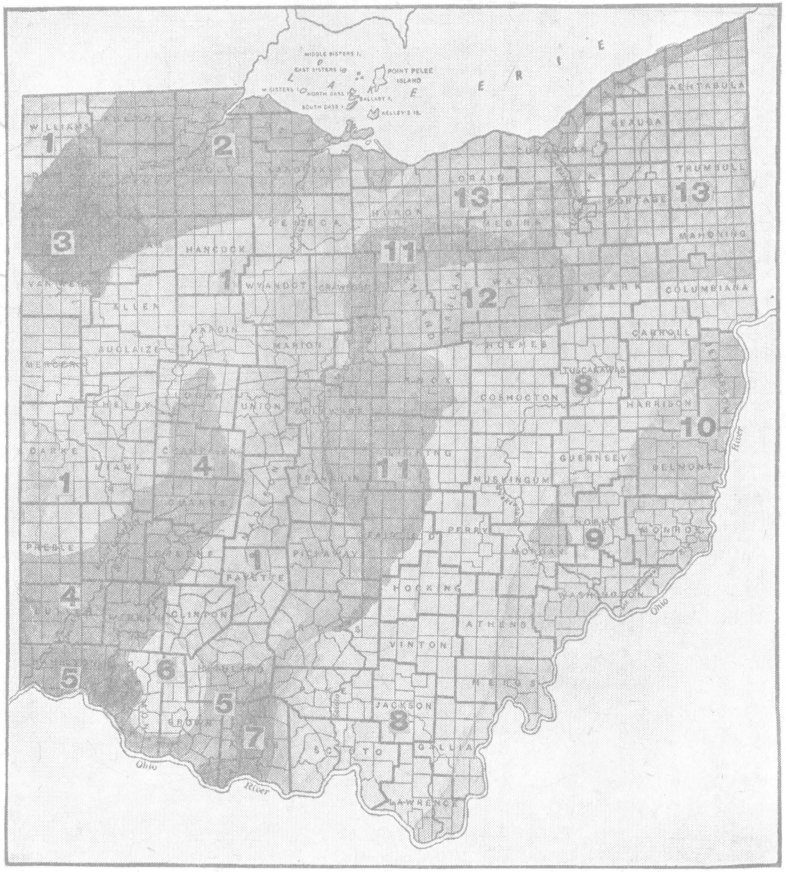
Glacial map of Ohio

Shaded portion in the southeast, unglaciated region; dark mulberry area in southwest, early Wisconsin drift; light dotted area contiguous to unglaciated area, moraines; fine, faintly dotted areas, late Wisconsin drift. (Photographed from U. S. Geological Survey, Monograph XLI, Pl. II. Survey by Frank Leverett, 1900.)

The Clyde series.—Wherever the topography is approximately level there are minor depressions which have received not only their own share of rainfall but also a surplus which has flowed in from

the higher land, carrying with it some of the finer soils and encouraging a ranker growth of vegetation, which has filled the soil with humus and darkened its color. Wherever the surface drainage has been obstructed this change has taken place, so that everywhere over the gently rolling to nearly flat lands the Miami soils are interspersed with areas of the black soils to which the name of Clyde has been given, while on the flat lands of the northwestern counties the Clyde becomes the predominant type.

Soil map of Ohio



1, Miami; 2, Clyde; 3, Fulton; 4, Bellefontaine; 5, Cincinnati; 6, Clermont; 7, Colbert; 8, Dekalb; 9, Dekalb and Upshur; 10, Dekalb and Brooke; 11, Volusia; 12, Wooster; 13, Volusia and Trumbull. (Reproduced from map of Reconnoissance Soil Survey of Ohio, published by Bureau of Soils, United States Department of Agriculture, 1912.)

The Fulton clay.—In that part of the primeval southwestward extension of Lake Erie now occupied by Paulding and adjacent parts of Auglaize, Putnam, Henry and Defiance Counties the Clyde,

elsewhere a loam, becomes a heavy, brownish-black clay, now called Fulton clay, deposited originally as a pond mud, occupied by elm and other semi-marsh vegetation when the water had sufficiently receded; now a black plain drained by deep open ditches, their banks forming the grades for the macadam roads which follow the section lines. The Fulton clay is a soil of great natural fertility, but requiring to be worked when in optimum moisture condition, as if too dry or too wet it breaks up in hard clods that are very difficult to pulverize, and in periods of drouth great cracks form which break the roots of the growing crop unless a mulch of loose earth be maintained by careful surface cultivation as drouth approaches.

The sugar beet industry of the State has centered in this region, the soil and climate having proved to be especially adapted to this crop.

The Clermont silt loam.—An area of several hundred square miles occupying eastern Clermont, northern Brown and adjacent territory in Highland, Clinton and Warren Counties, is a flat plateau gashed with the narrow, steep valleys of streams which have cut their way to the depth of 200 feet or more to reach the Miami in the west and the Ohio in the south. The soil covering this region, outside the stream valleys, is an ashy gray silt loam that bears considerable resemblance, in its physical character, to the wind-blown loessal soils that are found in other states. The substantial character of some of the older farm buildings in this region indicates that at one time the land yielded a fairly good return to the cultivator, but the partial drainage given by the decaying tree roots of the original forest has long since been obliterated by the plow sole; the surface has been exhausted of its vegetable matter by an exhaustive system of agriculture, and has become more and more impervious to water, remaining water-logged until late in the spring and baking hard under the summer sun, and for more than half a century the acre's yield has been far below the quantity necessary to pay fair wages to the cultivator. Underdrainage would seem to be the first thing needed on such a soil, but drainage requires capital, and when the land yields but a bare subsistence there is nothing left for improvements. Drainage, however, is only one of the necessary ameliorations for this soil, for it has been so depleted of all the essential elements of fertility, including lime, that drainage is useless unless supplemented by liming and liberal manuring or fertilizing. It is true that this country is underlaid with limestone, but the surface soil of the flat upland is entirely different in character from that of the slopes leading down into the valleys, on which

the outcrops of limestone have contributed to the making of a brown soil on which alfalfa grows luxuriously. Apparently the limestone floor of the upland has been covered by a blanket of wind-blown or water-borne material at an earlier age in geologic time than those during which the glaciated soils to the northward were deposited, from which blanket the lime has largely been leached out during the ages that have intervened.

Geologists believe that there were several periods of glaciation in North America with long intervals between, during some of which tropical conditions extended over Ohio and farther north. The earliest glaciation represented in Ohio, named the Illinoian, extended farthest south and the formation of the Clermont soils was during this period. The next glacial epoch, the Wisconsin, reached only to the northern line of Hamilton and Highland Counties in western Ohio, while the retreat of Lake Erie into the present basin occurred at a comparatively modern date. In the soils of Clermont and Paulding Counties, therefore, we have geologically the oldest and the newest soil formations in the glaciated region of Ohio.

Agriculturally this is also true, the Clermont silt loam having been brought under the plow almost or quite a century before the Fulton clay was redeemed from the swamp, and when, in 1911, county experiment farms were located in the two counties the price of land on the Fulton clay in Paulding County was found to be from three to four times the price asked for land with equal improvements on the Clermont silt loam. The results of the first few years' work on the experiment farms, however, strongly indicates the possibility of greatly reducing the differences in value between the two soils.

GLACIATED SHALE AND SANDSTONE SOILS

Between the sandy ridges of the ancient lake beaches on the north and the terminal moraine on the south, and east of the limestone area, is a level to rolling or hilly region, the rock floor of which includes the belt of shales and sandstones lying immediately over the limestones and also the strata of the lower coal measures, all of which has been overrun by the ice sheet, which has left a soil composed chiefly of material ground up from the underlying rock, but intermingled with transported material. Physically the soils thus formed bear considerable resemblance to the Miami series, and in the earlier surveys they were not always differentiated from that series, but further investigation has shown that the presence or absence of calcareous material must be made a fundamental point in soil classification.

The Wooster series.—Lying nearest the limit of glaciation the Wooster series includes soils ranging from gravelly loam to silt loam, the latter type predominating. The central farm of the Ohio Experiment Station is located upon a typical Wooster silt loam, which is described as a yellowish-brown, mealy silt loam, underlaid by a brownish-yellow, friable, silt loam subsoil. The surface soil is distinctly silty and has the mealy, smooth or velvety feel characteristic of all soils having a high percentage of silt. It contains a small percentage of very fine sand and so little clay as to possess but little plasticity. It washes badly in heavy rains because of its silty character. The color of the surface soil is rich yellowish brown when moist, changing to a brownish gray when dry.

In texture the subsoil does not differ materially from the surface soil, but it is more compact and slightly heavier. On the slopes where much of the silt has been washed out the soil contains a considerable percentage of small rock fragments, but on the more level areas these are but little in evidence.

On the slopes the soil is generally self-drained by stratified shales and sandstones, which may lie within 2 or 3 feet of the surface, but on the more level portions it may be 6 to 10 feet or more to the rock and tile drainage becomes necessary to the most profitable cultivation. White oak is the predominant forest growth of the Wooster soils.

The Volusia series.—The Wooster soils are intermingled on the south and east with the residual soils of the non-glaciated region, while on the west and north they become gradually heavier by a larger admixture of clay as the underlying rock changes from sandstone to argillaceous shales, and the color becomes lighter. To this type the name Volusia has been given. The Volusia soils include loams and clay loams, the latter phase being distinguished by greater imperviousness to water.

The Trumbull series.—To the north and east the Volusia soils shade into a still lighter color and are of level to flat contour, but possessing the chief characteristics of the Volusia, to which the name Trumbull has been given.

The Northeastern Test Farm of the Ohio Experiment Station is located on a typical Trumbull clay loam. Until underdrained the land was water-logged and cold, and the crops extremely poor, but with drainage, liming and the liberal use of phosphatic fertilizers profitable yields are being produced.

Beech is the predominant forest growth on the Trumbull soils, but where the land is more rolling and the surface drainage better the beech is largely replaced by sugar maple.

RESIDUAL SOILS

The line marking the limit of glaciation enters the limestone area of the State in northern Adams County and crosses southeastern Brown County, so that in this area there is but a small area of residual limestone soil, to which the name, Colbert silt loam, has been given. Passing to the sandstone area, the non-glaciated region covers the major part of 22 counties lying in a belt about 50 miles wide by 150 miles long and approximately parallel to the course of the Ohio River.

In topography, Ohio is a broad plateau, having an average altitude of nearly 1,000 feet, which falls away on the north to the basin of Lake Erie, the water level in which is 573 feet above the sea, and on the south to the valley of the Ohio, which at Cincinnati is about 140 feet lower than the level of the lake. Resting on the plateau, the great ice sheets of the glacial ages gave forth torrential streams as they receded northward under the sun's increasing heat, and these streams carved their way towards the river, so that the non-glaciated area was converted into a region of steep hills and deep valleys, not by the subterranean upheavels which, by setting the rocks on edge, have produced the mountains, but by such cutting, carried through eons of time, as that which has produced the gorge of Niagara. This is shown by the facts that the rocks in these southern hills lie in approximately level strata, and that the tops of the hills are not higher than the level of the interior plateau.

The rocks out of which these hills were carved are the shales, sandstones and occasional thin seams of limestone, between whose strata are found seams of coal.

The Dekalb series.—Where the underlying rocks consist almost entirely of grayish or other light-colored shales and sandstones they have weathered into types having gray or pale yellowish brown surface soils and yellow subsoils. The series includes sandy and stony loams, but the predominant type is the Dekalb silt loam, a grayish or light yellowish brown, mealy silt loam, containing a little more fine sand when derived from sandstones than where it is composed largely of shales. The typical soil has a smooth, velvety feel, and is rather mellow and easily tilled, with a slight tendency to run together. In cultivated fields the surface soil when dry is usually a very light gray, with a pale yellowish tinge, but when moist, as in freshly-plowed fields, the color is more nearly a light yellowish brown.

The subsoil is a yellow to brownish yellow, rather heavy silt loam or silty clay loam, which carries only a slightly smaller percentage of silt than the soil, but a larger percentage of clay.

The Dekalb silt loam probably occupies a larger area than any other soil type in the State, the Miami clay loam coming next to it in this respect. It is the principal soil type in a belt across the state, including Carroll, Tuscarawas, Coshocton, Guernsey, Muskingum, Perry, Hocking, Vinton, Jackson and Scioto Counties, while in the counties lying between these and the Ohio River it occupies a large part of the area.

Being derived from sandstones and shales that are generally deficient in lime, the Dekalb silt loam is usually in need of lime where it has been a considerable time under cultivation.

The Southeastern Test Farm of the Ohio Experiment Station, at Carpenter, Meigs County, is located on a typical Dekalb silt loam.

Calcareous residual soils.—In the region lying between the counties above named and the Ohio River, the Dekalb silt loam frequently merges into or is replaced by soils that owe their origin largely or altogether to calcareous rocks. Of these is the reddish Upshur clay loam or clay, underlain by a heavy, plastic clay which extends to a depth of 3 feet or more. The Upshur clay is very sticky when wet and cracks badly in drying. It is derived from red shales that contain considerable calcareous matter; it often contains lime concretions, and produces luxuriant alfalfa. It is usually found in small areas surrounded by Dekalb soil, and occurs chiefly in the southern river counties, frequently well up along the hillsides.

Going northward, limestone outcrops become more frequent and in places give rise to true limestone soils, as in parts of Belmont, Harrison and Jefferson Counties. The typical soil of this formation has been named the Brooke clay loam, which consists of a yellowish brown or dark brown, rather sticky clay loam or silty clay, underlaid by a grayish or yellowish brown or drab plastic silty clay, extending to the limestone, which is usually found at less than 3 feet from the surface.

The Brooke clay loam is a strong, productive soil, well adapted to bluegrass and alfalfa, and to corn and wheat where the hills are not too steep.

ALLUVIAL AND TERRACE SOILS

Throughout the State the streams have established flood plains, which have received the wash from the higher lands, producing soils of great fertility. The valleys of the Scioto, the Muskingum and the Miamis have become celebrated for their great crops, especially of corn.

In many places the present flood plains are flanked by terraces which were the flood plains of an earlier age, and which are now of even greater value than the bottom lands because of their immunity from overflow.

Both the alluvial and terrace soils have been largely derived from the soils of the higher lands along the courses of the streams. In the limestone area they may be expected to be well stocked with calcareous matter, while even in the sandstone area they are usually found to be better supplied with lime than the adjoining upland, due to the leaching of the lime from the upland and its redeposition in the valleys.

Very frequently both terrace and bottom lands are underlaid with gravel, giving natural drainage, and this combination, of lime supply and drainage, furnishes ideal conditions for alfalfa.

PEAT AND MUCK SOILS

At intervals across the State, on the broad watershed separating the lake and river drainage, are found deposits of muck or peat, due to still more complete obstruction of drainage than that which has produced the Clyde and Fulton soils. These peat swamps, worthless in their natural condition, become some of the most valuable soils in the State when reclaimed by drainage, their special adaptation being to the production of onions and celery.

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INDEX

Aborigines, 13, 17
Agricultural history, see history of agriculture
  Societies, 82
  Statistics, 87-246, 249-395
  Statistics, compilation of, 12
  Survey, 12
Agriculture during the Pioneer Period, 44
  From 1850 to 1910, 87
  Indian, 17-22
  Influences affecting, 9
  Influence on population, 10
Alfalfa, 162, 238
Alluvial soils, 437
Apples, 56
  Statistics and maps, 184
  Statistics since 1860, 249-395
  Varieties, 56
Bachelor tax, 46
"Backbone counties," 9, 43, 129, 237
Bailey, L. H., 7
Banks, country, 35
  "Wildcat," 45
Barley, 54
  Statistics and maps, 163
Barter, 45
Baum prehistoric village, 17
Beans in prehistoric mounds, 17
Bear, 69
Bellefontaine soil series, 429
Brooke clay loam, 436
Brown's corn planter, 226
Buckwheat, 54
  Statistics and maps, 166
Buffalo, 69
  Paths, 33
Burnett, Jacob, 20
Burr's expedition, 73
Butter, 96
Calcareous soils, 436
Canal lands, 30
Canals, 12, 14, 30, 74, 213
Canneries in Scioto Valley, 239
Carver, T. N., 7
Castor beans, 54
Cattle, breeds, 92, 245
  Feeding, 241
  Importation of Shorthorns, 63
  Industry, 239
  Introduction among Indians, 20
  Markets, 62, 241
  Of pioneers, 61
  Pure breeds, 85
  Statistics and maps, 240
  Statistics since 1850, 249
  See milch cows
Character, see population, character of
Cheese, 10, 63, 87, 97, 244
  Factories, 63, 98
Churches, 81
Cities, development of, 38, 216
Civil War, 14
Clark, Col. George Rogers, 18
"Clearings," 24, 44
Clermont silt loam, 432
Climate, 234
Clothes, 66
Clover, 156
  In limestone areas, 234
  Statistics and maps, 160
  Statistics by counties, 249-395
Clyde soil series, 430
Colbert silt loam, 435
College lands, 30
Colonization and the public lands, 24
  Schemes, 24
Columbus-Sandusky turnpike lands, 30
"Compact, The," 30
Congress Lands, 28, 31
Connecticut Western Reserve, see Western Reserve
Cooperation, 16
Cooperative societies, 63, 83
Corn, 48
  And clover in limestone areas, 234
  Counties, 237
  Culture, 50
  Feast, 22
  "Husking," 50
  Planters, 226
  An Indian crop, 18
  In prehistoric mounds, 17
  Statistics and maps, 116
  Statistics since 1850, 249
  See agriculture since 1850
Cotton grown in Ohio, 55
County statistics, 249-395
Crop production in Ohio since 1850, 247
  Rotations, see rotation of crops
  Feedable, 190
  Statistics by counties, 249-395
Cultivators, 225
Cutler, Manassah, 25
Dairy breeds, 92
  Industry, development, 87
  Products, 95
Dairying, 63, 235, 236
Deer, 69
Deere steel plow, 225
Dekalb soil series, 435
Dickens, Charles, visits Ohio, 71
Distilleries, 49
Dohrman's grant, 29
Donation Tract, 29
Drainage, 208, 432
Duvall, Captain Jonathan, 53, 55
Emerson, John, 24
English, 219
  Occupation, 23
Ernst's experimental orchard, 57
Exports, 46
Exporting companies, 83
Exports, 46
Fairs, 246
Farm implements and machinery, 14, 77, 79, 122, 135, 145, 223, 224
Farming types, 233
Farms, "Abandoned," 23
  Average size, 192
  Operated by tenants, 196
  U. S. census, 249-395
  Values, 199
Farmer, agencies influencing, 15
  First white, 24
Fertility, conservation, 78
Fertilizer statistics, 191
Fertilizers, 15
  And manure, amounts used, 248-398
Fire Lands, 27
Flax, 54
Forests, 6, 43, 233
French in Ohio, 23, 220
  Land grant, 29
Fruit, 44, 56
Fruits, native or Indian, 19
  Small, 187
Fulton clay soil, 432

Game, 68
Gatling seeder, 228
Geddes harrow, 226
Geological survey, 5
  Map, 429
Geology of counties, 248
German settlers, 11, 43, 219
Glacial map, 430
Glaciated soils, 433
Glaciation, 233, 428, 433
Grain drills, 228
  Cradle, 51, 77
Grapes, 57
  Statistics and maps, 188
Greenville treaty, 27
"Hard times," 35
Harmar, Col., 24
Hay, 55, 235
  Alfalfa, 162
  Clover, 160
  Defined, 153
  In corn counties, 237
  Statistics and maps, 152
  Statistics by counties, 249-395
Heckwelder, Rev. John, 20
Hemp, 55
History of agriculture, 7
  Of the agriculture of Ohio, 12
  Of agriculture, bibliography, 12
Hogs, see swine
Hops, 59
Horses, 60
  Pure breeds introduced, 61
  Statistics and maps, 115
  Statistics since 1850, 249
Horticulture, 56
Hunting and trapping, 69
"Husking bee," 80
Hussey reaper, 79, 224
Immigrants, 216, 223
Implements
  See farm implements and machinery
Importing companies, 63
Indian
  Agriculture, 17-22
  Character, 19-21
  Corn feast, 22
  Crops, 18, 19
  Crops destroyed, 18
  Farm implements, 20
  Population, 18
  Treaties, 34, 35
  Tribes, 18
Indians, Christian, 20, 29
  Reward for scalps, 69
Irish immigrants, 43, 75, 219
Jefferson, Thomas, 31, 73
Johnny Appleseed (John Chapman), 58
Kelly's Island, 11
Kentucky "Hill Billy," 11
  Pioneers from, 18, 43
Ketchum mower, 230
Kirtland nursery, 57
Labor, 82
Land in farms, U. S. census, 249-395
  Prices and values, 26, 34, 45, 199, 249-395
  Public, 24
  Purchased from Indians, 34
  Surveys and grants, 24, 43
  Taxes, 46
LaSalle in Ohio, 23
Leamings improve corn, 48
Licking Exporting Company, 83
Limestone areas, 234, 428
Linseed oil, 54
Linsey-woolsey, 54
Livestock, 60
  Farming, 14, 235
  Of Indians, 20
  Statistics, 249-395
  See also cattle, horses, etc.
Longsworth, Nicholas, 57
Loramie's store, 19
Lumber, 44
Machinery, see farm implements and machinery
McCormick reaper, 80, 224, 228
Maple products, 20, 183
Marietta settlement, 25
Markets and marketing, 36, 44, 62, 66, 67, 74, 77, 83, 182, 236, 241, 249
  Cooperative societies, 83
Marriage, 82, 84
Marsh harvester, 230
Meadows, statistics, 152, 249-395
Merino sheep, 112
Miami and Erie Canal, 75
Miami Exporting Company, 83
"Miami Slaughterhouse," 26
Miami soil series, 428
Migration westward, 33, 204, 217, 221
Milch cows, statistics and maps, 87
Milk, 89,99
  Condensed, 95
Mills, Prof. William C, 17
Mills and milling, 52, 77
Ministerial lands, 30
Missionaries
  See Moravian missionaries
Money, 35, 45
Moravian Indians, 20
  Lands, 29
  Missionaries, 20
Mound builders, 13, 17
Mowing machine, 224, 230
Muck soils, 437
Muster, 81
National road, 10, 33, 41, 73
New England Ohio Company, 25
New Orleans, trade with, 36, 44
  Steamboat, 44
New Purchase, 30
Northwest Territory organized, 24
Nurseries, 56, 57, 58
Oats, 55, 237
  Statistics by counties, 249-395
  Statistics and maps, 140
Officers' salaries, 46
Ohio Canal, 75
  Company's purchase, 24, 30
  Importing Company, 63
  Improved Chester White swine, 106
  River trade, 33, 44
"Old wheat belt," 129, 142
Onions, 182
Orchards, 29, 184
  Statistics by counties, 249-395
  Statistical maps, 184-186
Organizations, agricultural, 82
Oxen, 61
Pasture, statistics since 1850, 249-395
Peaches, 56
Peat soils, 437
Pennock seeder, 228
Pennsylvania Dutch, 10, 43
Periods in development of Ohio Agriculture, 13
Pioneer agriculture, 44
  Crops, 48
  Livestock, 60
  Period, 13
  Settlements, see settlements
Pioneers, 33
  See also settlers
  Social life, 81
Plow, 78, 224, 225
Poland China swine, 67, 106
Poll tax, 46
Popolation, 37, 216, 249
  Analyzed, 219
  Character of pioneer, 10, 43
  Development of, 37, 216

Foreign born, 219, 249
Influences affecting, 32, 216
Maps, 37, 217
U. S. census, 249-395
"Porkopolis," 67
Pork packing, 67
Potatoes, statistics by counties, 249-395
Statistics an dmaps, 171
Poultry, 68
Poverty, 32
Prices, 53, 64, 66, 68, 72, 84, 136, 205, 211
See also land values
Public lands, 24
Putnam, Israel, 64
Gen. Rufus, 25
Nursery, 56
Quakers, 43
Railroads, 14, 213
And land values, 202
"Raising," 4
Reaper, 79, 135, 145, 224
Increases man power, 228
Refugee Tract, 28
Religion
Quakers, 43
"Shakers," 84
Zoarites, 85
Renick, George, 63
Rice in Ohio, 54
River trade, 44
Roads, 14, 33, 69
Dickens' description of, 71
Rome Beauty apple, 59
Rotations, crop, 78, 120, 235
Rural population, see population
Rye, 54
Statistics by counties, 295-395
Statistics and maps, 169
Salt sections, 29
School lands, 30
Schools, 81
Scioto Land Company, 29
Scotch settlers, 43, 219
Separatists, see Zoarites
Settlements, 34, 69
Of Ohio, motive, 9
Settlers, first white, 24
Source and character, 10, 32, 43, 75
Squatters, 24, 28
Seven Range, 28, 31
"Shakers," 67, 84
Sheep, breeds, 64, 111
Development of industry, 107
Improvement, 111
Kept by pioneers, 64
Mutton breeds, 113
Spanish Merinos introduced, 64, 112
Statistics by counties, 249-395
Statistics and maps, 108
Sickle, 51
Silo, 94, 236
Small fruit, 57, 187
Social gatherings, 81
Societies, agricultural, 82
Cooperative, 83
Soil, 5
Soil types of Ohio, 428
Soils
Glaciated limestone, 428
See description of counties, 248-395
"Squatters," 24, 28, 31
Statistics, errors in crop, 247
Sources, 87
Steamboat, New Orleans first on the Ohio, 44
Steam power, 231
Strawberries, see small fruit
Sugar, 20
Sugarbeets, 181, 432
Survey, geological, 5
Surveys, system of, 31
Swine, 66
Breeds, 67, 85, 104
Industry, development, 100
Markets, 67
Statistics and maps, 100
Statistics by counties, 249-395
Swiss settlers, 10, 220
Symmes' Purchase, 26, 30, 31
Tanneries, 69
Taxable property, 47
Taxation system, 46
Terrace soils, 437
Threshing grain, 52
Machine, 231
Tobacco, 59, 237
Producing counties, 235
Statistics and maps, 175
"Tomahawk claims," 24
Topography, 435
Of counties, alphabetically arranged, 248
Influences types of farming, 233
Trade, 44
Transportation, 14, 44, 50, 69
Charges, 71, 77, 84
See canals
Treaties, Indian, 34, 35, 71
Treaty line, 35
Truck crops, 182
Trumbull soil series, 434
Turkeys, wild, 68
Types of farming, 233
United States Military Lands, 28, 31
Upshur clay, 436
Value of land and improvements, 209, 249-395
Vegetables, 182, 239
Virginia, settlers from, 43
Military Lands, 10, 27, 30, 33, 43
Volusia soil series, 434
Washington, George, 28
Wayne, General, destroys Indian crops and fruit, 19
General's report, 19
Wayne's Treaty, 34
Weeds, 49, 58
Western "fever"
See migration westward
Western Reserve, 10, 27, 30, 34, 43
Wheat, 51, 237
"Wheat belt, old," 129
Wheat counties, 236
Discouraging conditions, 1853-1868, 132
Drills, 228
Harvesting and threshing, 52
Midge, 131
Prices, 136
Reaper, 135
A source of income, 235
Statistics and maps, 128
Summer fallow for, 130
Varieties, 51
See also agriculture since 1850
Wheeler mower, 230
Whiskey, 34, 45, 46, 49
"Wildcat" state banks, 45
Wilderness Road, 34
Wine production, 11, 188
Wolves, 69
Women, pioneer, 81
Wood, Jethro, patent plow, 78
Woodland in farms, U. S. census, 249-395
Wool, 235
Growing, 87, 107
Prices, 66, 107
Woolen mills established, 63
Wells & Dickinson, 65
Wooster soil series, 434
"Yankees," 10, 44
Zane, Ebenezer, 26
Zane's Trace, 38, 43, 58, 71
Tracts, 29
Zoar community, 75
Zoarites, 85